

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"5083638".pn.	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:10
L6	5261	ncr.as.	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:37
L7	112	6 and walter	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:11
L8	20	7 and voice	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:11
L9	174	186/64,61.ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:37
L10	1444	235/383.ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:38
L11	995	705/16.ccls.	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:38
L12	2462	9 or 10 or 11	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:56
L13	327	12 and voice and ((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:57

EAST Search History

L14	5920	(respond\$3 or respons\$3) with voice with (instruction\$1 or command\$1)	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:41
L15	327	12 and 13	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:41
L16	8	14 and 15	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:45
L17	319	15 not 16	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:53
L18	0	17 and ((first or second or another or different) with voice with (type or pitch or tone))	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:47
L19	4816	((first or second or another or different) with voice with (type or pitch or tone))	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:58
L20	90245	voice and ((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:47
L21	2094	19 and 20	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:48
L22	0	17 and 21	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:48
L23	131	21 and (light and help)	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:48

EAST Search History

L24	4	21 and (light same (help or assistance))	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:53
L25	127	23 not 24	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:53
L26	0	23 not 24	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:53
L27	190	15 not 16	USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:54
L28	275	((first or second or another or different) with voice with (type or pitch or tone))	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:54
L29	0	27 and 28	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:54
L30	90245	voice and ((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:55
L31	1453180	((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)	US-PGPUB; USPAT; FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:55
L32	486583	((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:55
L33	486456	((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)	EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:56
L34	10707	30 and 33	EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:58
L35	291	9 or 10 or 11	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:56
L36	0	34 and 35	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:56

EAST Search History

L37	0	12 and voice and ((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:57
L38	10707	34 and voice	EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:58
L39	275	((first or second or another or different) with voice with (type or pitch or tone))	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:58
L40	49	38 and 39	FPRS; EPO; JPO; IBM_TDB	OR	OFF	2007/05/22 17:58

? logon

```
*** It is now 2007/05/22 18:05:25 ***
(Dialog time 2007/05/22 17:05:25)
```

```
HIGHLIGHT set on as '' ''
>>>100 is not in the range between 1 and 50, original value 30 is used.
IGOR705 is set ON as an alias for
2,9,15,16,20,35,65,77,99,148,160,233,256,275,347,348,349,474,475,476,583,6-
10,613,621,624,634,636,810,813
IGORMEDIC is set ON as an alias for
5,34,42,43,73,74,129,130,149,155,442,444,455
IGORINSUR is set ON as an alias for 169,625,637
IGORBANK is set ON as an alias for 139,267,268,625,626
IGORTRANS is set ON as an alias for 6,63,80,108,637
IGORSHOPCOUPON is set ON as an alias for 47,570,635,PAPERSMJ,PAPERSEU
IGORINVEN is set ON as an alias for 6,7,8,14,34,94,434
IGORFUNDTRANS is set ON as an alias for 608
```

? BIGOR705

```
>>>      77 does not exist
>>>      233 does not exist
>>>2 of the specified files are not available
      22may07 17:05:45 User268082 Session C11.1
      $0.00    0.439 DialUnits File415
      $0.00  Estimated cost File415
      $0.08  INTERNET
      $0.08  Estimated cost this search
      $0.08  Estimated total session cost   0.439 DialUnits
```

```
SYSTEM:OS - DIALOG OneSearch
File  2:INSPEC 1898-2007/May W2
      (c) 2007 Institution of Electrical Engineers
File  9:Business & Industry(R) Jul/1994-2007/May 18
      (c) 2007 The Gale Group
File  15:ABI/Inform(R) 1971-2007/May 22
      (c) 2007 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2007/May 21
      (c) 2007 The Gale Group
File  20:Dialog Global Reporter 1997-2007/May 22
      (c) 2007 Dialog
File  35:Dissertation Abs Online 1861-2007/Apr
      (c) 2007 ProQuest Info&Learning
File  65:Inside Conferences 1993-2007/May 22
      (c) 2007 BLDSC all rts. reserv.
File  99:Wilson Appl. Sci & Tech Abs 1983-2007/Apr
      (c) 2007 The HW Wilson Co.
File 148:Gale Group Trade & Industry DB 1976-2007/May 21
      (c) 2007 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
      (c) 1999 The Gale Group
File 256:TecInfoSource 82-2007/Jul
      (c) 2007 Info.Sources Inc
File 275:Gale Group Computer DB(TM) 1983-2007/May 21
      (c) 2007 The Gale Group
File 347:JAPIO Dec 1976-2006/Dec(Updated 070403)
      (c) 2007 JPO & JAPIO
```

File 348:EUROPEAN PATENTS 1978-2007/ 200719
 (c) 2007 European Patent Office
 *File 348: For important information about IPCR/8 and forthcoming changes to the IC= index, see HELP NEWSIPCR.
 File 349:PCT FULLTEXT 1979-2007/UB=20070518UT=20070510
 (c) 2007 WIPO/Thomson
 *File 349: For important information about IPCR/8 and forthcoming changes to the IC= index, see HELP NEWSIPCR.
 File 474:New York Times Abs 1969-2007/May 22
 (c) 2007 The New York Times
 File 475:Wall Street Journal Abs 1973-2007/May 22
 (c) 2007 The New York Times
 File 476:Financial Times Fulltext 1982-2007/May 22
 (c) 2007 Financial Times Ltd
 File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
 (c) 2002 The Gale Group
 *File 583: This file is no longer updating as of 12-13-2002.
 File 610:Business Wire 1999-2007/May 22
 (c) 2007 Business Wire.
 *File 610: File 610 now contains data from 3/99 forward.
 Archive data (1986-2/99) is available in File 810.
 File 613:PR Newswire 1999-2007/May 22
 (c) 2007 PR Newswire Association Inc
 *File 613: File 613 now contains data from 5/99 forward.
 Archive data (1987-4/99) is available in File 813.
 File 621:Gale Group New Prod.Annou.(R) 1985-2007/May 21
 (c) 2007 The Gale Group
 File 624:McGraw-Hill Publications 1985-2007/May 22
 (c) 2007 McGraw-Hill Co. Inc
 *File 624: Homeland Security & Defense and 9 Platt energy journals added
 Please see HELP NEWS624 for more
 File 634:San Jose Mercury Jun 1985-2007/May 19
 (c) 2007 San Jose Mercury News
 File 636:Gale Group Newsletter DB(TM) 1987-2007/May 21
 (c) 2007 The Gale Group
 File 810:Business Wire 1986-1999/Feb 28
 (c) 1999 Business Wire
 File 813:PR Newswire 1987-1999/Apr 30
 (c) 1999 PR Newswire Association Inc

Set	Items	Description
---	-----	-----

? S voice and ((self adj checking) or (self adj service) or pos or (point near3 sale) or terminal)

Processing

```

3232661  VOICE
          0  SELF ADJ CHECKING
          0  SELF ADJ SERVICE
201630   POS
          0  POINT NEAR3 SALE
1901851  TERMINAL
S1 134544  VOICE AND ((SELF ADJ CHECKING) OR (SELF ADJ SERVICE) OR
                  POS OR (POINT NEAR3 SALE) OR TERMINAL)
  
```

? S ((first or second or another or different) (W)voice (W)(type or pitch or tone))

```
Processing
Processing
Processing
Processed 10 of 27 files ...
Processing
Processing
Processed 20 of 27 files ...
Processing
Completed processing all files
    33452492 FIRST
    15907578 SECOND
    13849641 ANOTHER
    10483914 DIFFERENT
    3232661 VOICE
    27357552 TYPE
    898369 PITCH
    666277 TONE
S2      15 ((FIRST OR SECOND OR ANOTHER OR DIFFERENT) (W)VOICE
          (W) (TYPE OR PITCH OR TONE))
```

? S S1 AND S2

134544 S1
15 S2
S3 6 S1 AND S2

? T S3/3,K/1-6

DIALOG(R)File 348: EUROPEAN PATENTS
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3/3K/1
02115917

System and method for personalised text-to-voice synthesis
Verfahren und System zur Personalisierung von Text-zu-Sprache Umsetzung
Système et méthode pour la personnalisation de la synthèse texte vers voix
System and method for personalised text-to-**voice** synthesis

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	Country	Number	Kind	Date	
Patent	EP	1703492	A1	20060920	(Basic)
	EP	1703492	B1	20070509	
Application	EP	2005102059		20050316	

Designated States:

AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES;
FI; FR; GB; GR; HU; IE; IS; IT; LI; LT;
LU; MC; NL; PL; PT; RO; SE; SI; SK; TR;

Extended Designated States:

AL; BA; HR; LV; MK; YU;

International Classification (Version 8)

IPC	Level	Value	Position	Status	Version	Action	Source	Office
G10L-0013/04	A	I	F	B	20060101	20050817	H	EP
G10L-0019/00	A	I	L	B	20060101	20050817	H	EP

Abstract ...being received from a sender. A text message to present audibly is received. An output **voice** to present the text message is retrieved, wherein the output **voice** is synthesized using predefined **voice** characteristic information to represent the sender's **voice**. The output **voice** is used to audibly present the text message to the user.

Abstract Word Count: 74

NOTE: 2

NOTE: Figure number on first page: 2

Legal Status

Type	Pub. Date	Kind	Text

Language

Publication: English

Procedural: English

Application: English

Fulltext Availability

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200638	444
SPEC A	(English)	200638	2480
CLAIMS B	(English)	200719	388
CLAIMS B	(German)	200719	351
CLAIMS B	(French)	200719	451
SPEC B	(English)	200719	2816
Total Word Count (Document A) 2925			
Total Word Count (Document B) 4006			
Total Word Count (All Documents) 6931			

Specification: ...A1

The present invention relates generally to text-to-voice synthesis and specifically to a method and system for personalizing such synthesis.

Text-to-voice synthesis technology provides the ability to convert arbitrary text into audible speech. Accordingly, this technology may be used to provide textual information to people via voice messages. These voice messages can prove especially useful in applications where audible output is a preferable form of... ...of a wireless communication device with a means for providing textual information to people via voice messages.

However, current systems generally use a single pre-selected voice to present the voice messages for presenting all incoming text messages in an audible format. This limitation may present several issues, which are described as follows.

Presenting all incoming text messages using a single voice will likely result in a monotonous tone for the voice message. Accordingly, it may be difficult for the user of the device user (referred to... ...properly interpreted.

Additionally, the device user may confuse content from different messages. Since a single voice presents different voice messages, there is no easy way for the device user to distinguish between different messages.... for audibly outputting a received text message to a user, the device comprising: data representing voice characteristic information associated with a sender of the text message; a processor for synthesizing an output voice in accordance with the voice characteristic information; and output for audibly presenting the text message to the user using the output voice.

In accordance with a further aspect of the present invention there is provided a method... ...method comprising the steps of: receiving a text message to present audibly; retrieving an output **voice** to present the text message, the output **voice** being synthesized using predefined **voice** characteristic information to represent the sender's **voice**; and using the output **voice** to audibly present the text message to the user.

BRIEF DESCRIPTION OF THE DRAWINGS

The.... network; and

Figure 2 is a flow chart illustrating the operation of personalizing text to **voice** synthesis.

DETAILS

For convenience, like numerals in the description refer to like structures in the.... of components including a wireless network, a relay, a Public Switched Telephone Network (PSTN), a **Voice** over Internet Protocol (VoIP) network, and the like.

In the present embodiment, specific **voice** characteristics of the sender are represented when the message is presented to the user in.... the general operation of the present embodiment is represented by numeral 200. In step 202, **voice** characteristic information of the sender is captured. In step 204, the **voice** characteristic information is transmitted to the user along with the message. In step 206, the **voice** characteristic information is applied to the message as it is presented to the user.

The **voice** characteristic information discussed above may be as simple as a single bit indicating whether the sender is male or female. Alternately, the **voice** characteristic information may be more complex and capture more of the sender's **voice** characteristic information.

The sound of person's **voice** can be thought to be comprised of a plurality of **voice** characteristics. These **voice** characteristics can be captured in a number of different ways. The following paragraphs provide several.... of elements of a person's speech that characterize the sound of his or her **voice**.

The speed at which the sender speaks is one **voice** characteristic. The speaking speed can be determined by a number of factors, as will be.... together to determine a speed characteristic.

The frequency at which the sender speaks is another **voice** characteristic. Accordingly, a pitch of the sender's **voice** is determined. The level at which this **voice** characteristic is measured depends upon the implementation. That is, if it is sufficient to determine whether or not the **voice** is a male or female **voice**, then the frequency can be represented by a single bit and the user will be presented with either a generic male pitch or a generic female pitch for the **voice**.

Alternately, the pitch of the sender's **voice** may be encoded by a plurality of bits. Since more data is available to represent the pitch of the sender's **voice**, the system will be able to more closely mimic the actual pitch of the sender's **voice** when presenting the audio message to the user.

The volume at which the sender speaks is yet another **voice** characteristic. The overall volume at which the sender speaks can be defined by several variables.... in the art, the above list is a small sample of possible ways of capturing **voice** characteristics.

In the present embodiment, the **voice** characteristic information is determined at the sender. The

simplest method for selecting **voice** characteristic information allows the sender to select a **voice** from a list of at least two predefined voices. Preferably there is at least one male and one female **voice** from which to choose. The sender can then select the **voice** that they prefer most, but ideally they would select the **voice** that most accurately represents the sender's true **voice**.

If the set of predefined voices is common to all devices, then each of the... ...assigned identifiers. The identifiers can be used by the user's device to identify the **voice** selected by the sender for presenting the message.

Alternately, if the set of predefined voices is not common to all devices, a series of differences, referred hereinafter to as **voice** deltas, are calculated with reference to a standard **voice**. The **voice** deltas can be used by the user's device to replicate the **voice** selected by the sender for presenting the message.

In an alternate embodiment, the sender is presented with a number of **voice** characteristic options. The sender can choose to set each of the **voice** characteristic options or leave them at a default value. Once the sender has set the desired **voice** characteristic options, a **voice** defined by the **voice** characteristic options is demonstrated to the sender using the sender's device.

If the sender is dissatisfied with the way the **voice** sounds, the sender can modify the **voice** characteristic options until the sender is satisfied. Once the sender is satisfied, the **voice** characteristic information can be used to represent the sender.

If the ability to interpret the **voice** characteristic options is common to all devices, then the values of the **voice** characteristic options can be sent to the user's device. The values can be used by the user's device to replicate the **voice** characteristic information defined by the sender for presenting the message.

Alternately, if the ability to interpret the **voice** characteristic options is not common to all devices, a series of **voice** deltas are calculated with reference to a standard **voice** for transmission to the user's device. The **voice** deltas can be used by the user's device to replicate the **voice** selected by the sender for presenting the message.

In yet an alternate embodiment, the sender's device is provided with a software application used to determine the sender's **voice** characteristics. The application prompts the user to speak a portion of text. The portion ofshould encapsulate the characteristics that are to be captured to facilitate accurate capture of the **voice** characteristics.

In the present embodiment, several **voice** characteristics are defined for the software to monitor. The **voice** characteristics used to define the sender's **voice** and which are monitored by the software include those described in detail above. Additional **voice** characteristics will become apparent to a person of ordinary skill in the art. Further, different embodiments may use various combinations of these **voice** characteristics as desired.

Similar to the previous embodiments, the **voice** characteristics can be transmitted to the user's device as either a set of **voice** characteristics or a series of **voice** deltas calculated between the spoken **voice** and a standard **voice**. The **voice** characteristics can be used by the user's device to replicate the **voice** monitored by the software for presenting the message.

In yet an alternate embodiment, the sender.... ...during conversation. This embodiment is particularly useful when the sender uses the device for other **voice** purposes, such as a cellular telephone or **voice** recorder. The software application monitors the sender's speech and dynamically adjusts the **voice**

characteristics accordingly. When the sender transmits the message, the most recent version of the **voice** characteristics can be transmitted to the user's device as either a set of **voice** characteristics or a series of **voice** deltas calculated between the spoken **voice** and a standard **voice**. The **voice** characteristics can be used by the user's device to replicate the **voice** monitored by the software for presenting the message.

The **voice** characteristics of the sender will be transmitted along with the message. For email, the **voice** characteristic information can be embedded in a special header or digital signature. For instant messaging, the **voice** characteristic information can be embedded in the message header. Other transmission modes will be apparent to a person skilled in the art.

Yet further, the standard **voice** may be transmitted along with the **voice** characteristics when the **voice** characteristics are represented by **voice** deltas. This can be used to assure a consistent reference **voice** when the user's device attempts to mimic the sender's **voice** while presenting the message.

The user's device includes memory for storing the **voice** characteristic information associated with the sender of the text message and a processor for synthesizing an output **voice** in accordance with the **voice** characteristic information. The device further includes an output for audibly presenting the text message to the user using the output **voice**. Typically, the output is in the form of one or more speakers. However, the device may output the **voice** to an external device to audible output via a wired or wireless connection. For example.... signal to the vehicle's audio system. The vehicle's audio system, in turn, outputs the **voice** using the vehicle's speaker system.

When the user chooses to listen to the message instead of reading it, the **voice** characteristic information transmitted along with the message is used to present the message. Depending upon the implementation the sender's **voice** is represented as a set of **voice** characteristic information or a series of **voice** deltas. The user's device uses the **voice** characteristic information to mimic the sender's **voice** and present the message to the user.

When presenting the message, the user's device may also utilize known text symbols to alter the **voice** characteristics during playback. For example, emoticons are a well-known form of representing emotions using.... When a smiley is present in the text of the message, the tone of the **voice** can be altered to indicate the sender's emotion. As will be appreciated by a.... represent a variety of emotions.

In all of the embodiments described above, the sender's **voice** characteristics are defined by the sender. In an alternate embodiment, the sender's **voice** characteristics may also be defined by the user. Therefore, if the sender does not, or cannot, define his or her **voice** characteristics, the user can still define certain **voice** characteristics to represent the sender.

In the present embodiment, the user can assign **voice** characteristic information to a sender identifier, such as an email address or instant message user.... when the user receives a message from a sender corresponding with the sender identifier, the **voice** characteristic information is used to present the message. Similar to the previous selection embodiments described, the user can select the **voice** characteristics in order to best represent the sender's **voice**.

Yet further, the user may have a software application on the user's device for analyzing a sender's **voice**. This can be applied, for example, if the user's device includes telephone functionality. In.... phone, the sender may be identified by telephone, allowing the software to dynamically update the **voice** characteristics of the sender.

Although preferred embodiments of the invention have been described herein, it...

Specification: ...B1

The present invention relates generally to **text-to-voice** synthesis and specifically to a method and system for personalizing such synthesis.

Text-to-voice synthesis technology provides the ability to convert arbitrary text into audible speech. Accordingly, this technology may be used to provide textual information to people via **voice** messages. These **voice** messages can prove especially useful in applications where audible output is a preferable form of... ...of a wireless communication device with a means for providing textual information to people via **voice** messages.

However, current systems generally use a single pre-selected **voice** to present the **voice** messages for presenting all incoming text messages in an audible format. This limitation may present several issues, which are described as follows.

Presenting all incoming text messages using a single **voice** will likely result in a monotonous tone for the **voice** message. Accordingly, it may be difficult for the user of the device user (referred to... ...properly interpreted.

Additionally, the device user may confuse content from different messages. Since a single **voice** presents different **voice** messages, there is no easy way for the device user to distinguish between different messages... ...calm.

[0007a] US6801931 discloses a system and method for transmitting e-mail messages along with **voice** information of the sender or other speaker to a receiver **terminal**. The method includes defining a set of basis vectors associated with a human **voice** and attaching the vectors to the message payload of the text message. The combined message.... ...set of basis vectors are then transmitted through a communications network. The message including the **voice** model defined by the basis vectors is then processed such that the recipient hears the text portions thereof read in the **voice** of the sender. However, a sender may attach basis vectors corresponding to a speaker other.... ...for receiving text messages including e-mail messages, processing the text messages according to defined **voice** tone data information stored within the memory of the **voice** processing device and reading aloud the text message in the **voice** tone. Different **voice** tones may be ascribed to different messages such that different received messages are read aloud in a **different voice tone**.

[0007d] None of the foregoing references teaches transmitting **voice** characteristics determined as a deviation (or delta) from a predefined standard **voice**.

All of the above issues affect the way the user responds to the incoming message.... ...a received text message to a user, the device comprising: means for retrieving data representing **voice** characteristic information associated with a sender of the text message, wherein the data representing the **voice** characteristic information defines the **voice** characteristic information as a set of **voice** characteristics, each of the **voice** characteristics representing a difference between a desired **voice** characteristic and a corresponding predefined **voice** characteristic of a standard **voice**; a processor for synthesizing an output **voice** in accordance with the **voice** characteristic information; and an output for audibly presenting the text message to the user using the output **voice**.

In accordance with a further aspect of the present invention such as claimed in claim... ...method

comprising the steps of: receiving a text message to present audibly; retrieving an output **voice** to present the text message, the output **voice** being synthesized using predefined **voice** characteristic information to represent the sender's **voice**, the predefined **voice** characteristic information being determined by a set of **voice** deltas, each of the **voice** deltas representing a difference between a desired **voice** characteristic and a corresponding predefined **voice** characteristic of a standard **voice**; and using the output **voice** to audibly present the text message to the user.

BRIEF DESCRIPTION OF THE DRAWINGS

The.... network; and

Figure 2 is a flow chart illustrating the operation of personalizing text to **voice** synthesis.

DESCRIPTION OF PREFERRED EMBODIMENTS

For convenience, like numerals in the description refer to like.... of components including a wireless network, a relay, a Public Switched Telephone Network (PSTN), a Voice over Internet Protocol (VoIP) network, and the like.

In the present embodiment, specific **voice** characteristics of the sender are represented when the message is presented to the user in.... the general operation of the present embodiment is represented by numeral 200. In step 202, **voice** characteristic information of the sender is captured. In step 204, the **voice** characteristic information is transmitted to the user along with the message. In step 206, the **voice** characteristic information is applied to the message as it is presented to the user.

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The sound of person's **voice** can be thought to be comprised of a plurality of **voice** characteristics. These **voice** characteristics can be captured in a number of different ways. The following paragraphs provide several.... of elements of a person's speech that characterize the sound of his or her **voice**.

The speed at which the sender speaks is one **voice** characteristic. The speaking speed can be determined by a number of factors, as will be.... together to determine a speed characteristic.

The frequency at which the sender speaks is another **voice** characteristic. Accordingly, a pitch of the sender's **voice** is determined. The level at which this **voice** characteristic is measured depends upon the implementation. That is, if it is sufficient to determine whether or not the **voice** is a male or female **voice**, then the frequency can be represented by a single bit and the user will be presented with either a generic male pitch or a generic female pitch for the **voice**.

Alternately, the pitch of the sender's **voice** may be encoded by a plurality of bits. Since more data is available to represent the pitch of the sender's **voice**, the system will be able to more closely mimic the actual pitch of the sender's **voice** when presenting the audio message to the user.

The volume at which the sender speaks is yet another **voice** characteristic. The overall volume at which the sender speaks can be defined by several variables.... in the art, the above list is a small sample of possible ways of capturing **voice** characteristics.

In the present embodiment, the **voice** characteristic information is determined at the sender. The simplest method for selecting **voice** characteristic information allows the sender to select a **voice** from a list of at least two predefined voices. Preferably there is at least one male and one female **voice** from which to choose. The sender can then select the **voice** that they prefer most, but ideally they would select the **voice** that most accurately represents the sender's true **voice**.

If the set of predefined voices is common to all devices, then each of the... ...assigned identifiers. The identifiers can be used by the user's device to identify the **voice** selected by the sender for presenting the message.

Alternately, if the set of predefined voices is not common to all devices, a series of differences, referred hereinafter to as **voice** deltas, are calculated with reference to a standard **voice**. The **voice** deltas can be used by the user's device to replicate the **voice** selected by the sender for presenting the message.

In an alternate embodiment, the sender is presented with a number of **voice** characteristic options. The sender can choose to set each of the **voice** characteristic options or leave them at a default value. Once the sender has set the desired **voice** characteristic options, a **voice** defined by the **voice** characteristic options is demonstrated to the sender using the sender's device.

If the sender is dissatisfied with the way the **voice** sounds, the sender can modify the **voice** characteristic options until the sender is satisfied. Once the sender is satisfied, the **voice** characteristic information can be used to represent the sender.

If the ability to interpret the **voice** characteristic options is common to all devices, then the values of the **voice** characteristic options can be sent to the user's device. The values can be used by the user's device to replicate the **voice** characteristic information defined by the sender for presenting the message.

Alternately, if the ability to interpret the **voice** characteristic options is not common to all devices, a series of **voice** deltas are calculated with reference to a standard **voice** for transmission to the user's device. The **voice** deltas can be used by the user's device to replicate the **voice** selected by the sender for presenting the message.

In yet an alternate embodiment, the sender's device is provided with a software application used to determine the sender's **voice** characteristics. The application prompts the user to speak a portion of text. The portion ofshould encapsulate the characteristics that are to be captured to facilitate accurate capture of the **voice** characteristics.

In the present embodiment, several **voice** characteristics are defined for the software to monitor. The **voice** characteristics used to define the sender's **voice** and which are monitored by the software include those described in detail above. Additional **voice** characteristics will become apparent to a person of ordinary skill in the art. Further, different embodiments may use various combinations of these **voice** characteristics as desired.

Similar to the previous embodiments, the **voice** characteristics can be transmitted to the user's device as either a set of **voice** characteristics or a series of **voice** deltas calculated between the spoken **voice** and a standard **voice**. The **voice** characteristics can be used by the user's device to replicate the **voice** monitored by the software for presenting the message.

In yet an alternate embodiment, the sender... ...during conversation. This embodiment is particularly useful when the sender uses the device for other **voice** purposes, such as a cellular telephone or **voice**

recorder. The software application monitors the sender's speech and dynamically adjusts the **voice** characteristics accordingly. When the sender transmits the message, the most recent version of the **voice** characteristics can be transmitted to the user's device as either a set of **voice** characteristics or a series of **voice** deltas calculated between the spoken **voice** and a standard **voice**. The **voice** characteristics can be used by the user's device to replicate the **voice** monitored by the software for presenting the message.

The **voice** characteristics of the sender will be transmitted along with the message. For email, the **voice** characteristic information can be embedded in a special header or digital signature. For instant messaging, the **voice** characteristic information can be embedded in the message header. Other transmission modes will be apparent to a person skilled in the art.

Yet further, the standard **voice** may be transmitted along with the **voice** characteristics when the **voice** characteristics are represented by **voice** deltas. This can be used to assure a consistent reference **voice** when the user's device attempts to mimic the sender's **voice** while presenting the message.

The user's device includes memory for storing the **voice** characteristic information associated with the sender of the text message and a processor for synthesizing an output **voice** in accordance with the **voice** characteristic information. The device further includes an output for audibly presenting the text message to the user using the output **voice**. Typically, the output is in the form of one or more speakers. However, the device may output the **voice** to an external device to audible output via a wired or wireless connection. For example... ...signal to the vehicle's audio system. The vehicle's audio system, in turn, outputs the **voice** using the vehicle's speaker system.

When the user chooses to listen to the message instead of reading it, the **voice** characteristic information transmitted along with the message is used to present the message. Depending upon the implementation the sender's **voice** is represented as a set of **voice** characteristic information or a series of **voice** deltas. The user's device uses the **voice** characteristic information to mimic the sender's **voice** and present the message to the user.

When presenting the message, the user's device may also utilize known text symbols to alter the **voice** characteristics during playback. For example, emoticons are a well-known form of representing emotions using... ...When a smiley is present in the text of the message, the tone of the **voice** can be altered to indicate the sender's emotion. As will be appreciated by a... ...represent a variety of emotions.

In all of the embodiments described above, the sender's **voice** characteristics are defined by the sender. In an alternate embodiment, the sender's **voice** characteristics may also be defined by the user. Therefore, if the sender does not, or cannot, define his or her **voice** characteristics, the user can still define certain **voice** characteristics to represent the sender.

In the present embodiment, the user can assign **voice** characteristic information to a sender identifier, such as an email address or instant message user... ...when the user receives a message from a sender corresponding with the sender identifier, the **voice** characteristic information is used to present the message. Similar to the previous selection embodiments described, the user can select the **voice** characteristics in order to best represent the sender's **voice**.

Yet further, the user may have a software application on the user's device for analyzing a sender's **voice**. This can be applied, for example, if the user's device includes telephone functionality. In... ...phone, the sender may be identified by telephone, allowing the software to dynamically update the **voice** characteristics of the sender.

Although preferred embodiments of the invention have been described herein, it...

Claims: ...a received text message to a user, the device comprising:means for retrieving data representing **voice** characteristic information associated with a sender of the text message; a processor for synthesizing an output **voice** in accordance with the **voice** characteristic information; and an output for audibly presenting the text message to the user using the output **voice**.

2. The communication device of claim 1, wherein the data representing the **voice** characteristic information define the **voice** characteristic information as a set of **voice** characteristics, each of the **voice** characteristics representing a predefined **voice** parameter.
3. The communication device of claim 1, wherein the data representing the **voice** characteristic information define the **voice** characteristic information as a set of **voice** characteristics, each of the **voice** characteristics representing a difference between a desired **voice** characteristic and a corresponding predefined **voice** characteristic of a standard **voice**.
4. The communication device of any one of claims 1 to 3, wherein the text... ...method comprising the steps of:receiving a text message to present audibly;

retrieving an output voice to present the text message, the output voice being synthesized using predefined voice characteristic information to represent the sender's voice; and

using the output voice to audibly present the text message to the user.

6. The method of claim 5, wherein the predefined **voice** characteristic information is determined by a set of **voice** characteristics, each of the **voice** characteristics representing a predefined **voice** parameter.
7. The method of claim 5, wherein the predefined **voice** characteristic information is determined by a set of **voice** characteristics, each of the **voice** characteristics representing a difference between a desired **voice** characteristic and a corresponding predefined **voice** characteristic of a standard **voice**.
8. The method of any one of claims 5 to 7, further comprising the step of selecting values for defining the **voice** characteristic information.
9. The method of any one of claims 5 to 7 further comprising the step of automatically determining values for the predefined **voice** characteristic information.
10. The method of any one of claims 5 to 9, wherein the set of **voice** characteristics is defined by the sender and transmitted to the user.
11. The method of claim 10, wherein the set of **voice** characteristics is transmitted to the user along with the message.
12. The method of any one of claims 5 to 9, wherein the set of **voice** characteristics is defined by the user.
13. A computer readable medium comprising instruction means, which...

Claims: ...received text message to a user, the device (102) comprising:means for retrieving data

representing **voice** characteristic information associated with a sender of the text message, wherein the data representing the **voice** characteristic information defines the **voice** characteristic information as a set of **voice** deltas, each of the **voice** deltas representing a difference between a desired **voice** characteristic and a corresponding predefined **voice** characteristic of a standard **voice**; a processor for synthesizing an output **voice** in accordance with the **voice** characteristic information; and an output for audibly presenting the text message to the user using the output **voice**.

2. The communication device of claim 1, wherein the text message is an electronic mail... ...method comprising the steps of: receiving a text message to present audibly;

retrieving an output voice to present the text message, the output voice being synthesized using predefined voice characteristic information to represent the sender's voice, the predefined voice characteristic information being determined by a set of voice deltas, each of the voice deltas representing a difference between a desired voice characteristic and a corresponding predefined voice characteristic of a standard voice; and

using the output voice to audibly present the text message to the user.

4. The method of claim 3, further comprising the step of selecting values for defining the **voice** characteristic information.

5. The method of claim 3 or claim 4, further comprising the step of automatically determining values for the predefined **voice** characteristic information.

6. The method of any one of claims 3 to 5, wherein the **voice** characteristic information is defined by the sender and transmitted to the user.

7. The method of claim 6, wherein the **voice** characteristic information is transmitted to the user along with the message.

8. The method of any one of claims 3 to 5, wherein the **voice** characteristic information is defined by the user.

9. The method of any one of claims 3 to 7, wherein the predefined **voice** characteristic of a standard **voice** is transmitted along with the **voice** deltas.

10. A computer readable medium comprising instruction means, which, when executed on a computer...

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3/3K/2
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Speech synthesis
Sprachsynthese

Synthese de la parole

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NOTE: 4

NOTE: Figure number on first page: 4

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Available Text	Language	Update	Word Count
CLAIMS A	(English)	200201	983
SPEC A	(English)	200201	6945
CLAIMS B	(English)	200649	1086
CLAIMS B	(German)	200649	980
CLAIMS B	(French)	200649	1361
SPEC B	(English)	200649	7088
Total Word Count (Document A) 7929			
Total Word Count (Document B) 10515			
Total Word Count (All Documents) 18444			

Specification: ...user of the communications device in order to provide synthesised speech which sounds like the **voice** of the designated user.

Preferably the speech synthesis template handler is arranged to send the... ...digital assistant) or a mobile, portable computer such as a laptop computer or a network **terminal**.

According to a second aspect of the invention there is provided a communications device comprising... ...particularly desirable to synthesise speech which uses a speech synthesis template prepared according to the **voice** of a user sending the text message, typically by using a sending communications device (referred... ...in the following as a "sending device") so that the synthesised speech sounds like the **voice** of the user sending the text message.

Other aspects of the invention are computer programs... ...present the content of the text message in an audible form which corresponds to the **voice** of the sender. If the speech synthesis template is not located in the recipient device... ...they are read or even identify the sender of a text message depending on the **voice** in which it is read.

When a sending device 110 first sends a text message...for example, be determined by the number of e-mails received from the person whose **voice** the speech synthesis template represents. Figure 7 shows a communications system for handling speech synthesis... ...software 165.

The operation of the communications system will now be described. Typically the network **terminal** 160 is a user's personal computer. If a user desires to make his speech... ...server is typically under control of the operator of the network 130.

Alternatively the network **terminal** 160 is provided by and under the control of a service provider. In

this case... ...now be described. This involves teaching the speech synthesis templates the specific characteristics of the **voice** to be synthesised so that it can be reproduced.

In one embodiment, the communication devices generate text messages by **voice** recognition. In order to preserve memory space, a communication device has a combined speech recognition... ...with a text message can ensure that the text message is spoken by a synthesised **voice** having the correct gender. One way of doing this is to check the forename of... ...speech synthesis template could potentially enable fraudulent messages to be presented using someone else's "**voice**" it may be preferred to include some sort of digital signature in the speech synthesis... ...supplied to the communications devices.

The invention concerns a way of synthesising speech with the **voice** of a user. It also concerns a way of providing different synthesised voices for different... ...a network based server. If a subscriber desires to have an answering message on his **voice** mail box, the subscriber sends a message to the server including text which is to form the basis of the answering message and indicating the **voice** in which the answering message is to be spoken and the **voice** mail box to which the answering message is to be applied. The processor uses an... ...synthesised answering message and the message is then transmitted to a memory associated with the **voice** mail box. When a call is made which leads to activation of the answering message of the **voice** mail box, the memory is accessed and the synthesised answering message is played to the...

Specification: ...is adapted to obtain text data and read the text data aloud by using a **voice** synthesiser. The device stores a plurality of **voice** tones and allots one **voice** tone to one message and allots **another voice tone** to another message. The respective messages can be read in respective allotted **voice** tones. The type of tones which can be used are a high tone male **voice**, a low bass male **voice**, a high tone female **voice**, a low female **voice**, and a child's **voice**. Other voices are possible such as a robot **voice**. In the case that the number of senders of text messages exceeds the number of **voice** tones, the **voice** tones are "recycled", for example five **voice** tones are allotted to the first five text messages and then used again for the... ...user of the communications device in order to provide synthesised speech which sounds like the **voice** of the designated user.

Preferably the speech synthesis template handler is arranged to send the... ...digital assistant) or a mobile, portable computer such as a laptop computer or a network **terminal**.

According to a second aspect of the invention there is provided a communications device comprising... ...particularly desirable to synthesise speech which uses a speech synthesis template prepared according to the **voice** of a user sending the text message, typically by using a sending communications device (referred... ...in the following as a "sending device") so that the synthesised speech sounds like the **voice** of the user sending the text message.

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Alternatively the network **terminal** 160 is provided by and under the control of a service provider. In this case... ...now be described. This involves teaching the speech synthesis templates the specific characteristics of the **voice** to be synthesised so that it can be reproduced.

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The invention concerns a way of synthesising speech with the **voice** of a user. It also concerns a way of providing different synthesised voices for different... ...a network based server. If a subscriber desires to have an answering message on his **voice** mail box, the subscriber sends a message to the server including text which is to form the basis of the answering message and indicating the **voice** in which the answering message is to be spoken and the **voice** mail box to which the answering message is to be applied. The processor uses an... ...synthesised answering message and the message is then transmitted to a memory associated with the **voice** mail box. When a call is made which leads to activation of the answering message of the **voice** mail box, the memory is accessed and the synthesised answering message is played to the...

Claims: ...an output to provide the synthesised speech in an audible form which corresponds to the **voice** of the sender.

2. A communications device according to claim 1 wherein the identifier identifies... ...an output to provide the synthesised speech in an audible form which corresponds to the **voice** of the sender.

19. A communications system according to claim 18 comprising corresponding synchronisation units... ...into synthesised speech; and

generating the synthesised speech in a form which corresponds to the voice of the sender.

23. A method according to claim 22 in which the identifier identifies... ...speech in a signal to be played in an audible form which corresponds to the **voice** of the sender.

31. A computer program product according to claim 30 which is stored...

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Apparatus and method for operating a self-service checkout terminal having a voice generating

device associated therewith

Vorrichtung und Verfahren zum Betrieb eines mit einer Spracherzeugungsvorrichtung versehenen Selbstbedienungsabrechnungsterminals

Système et procédé de fonctionnement d'un terminal de caisse d'enregistrement en libre-service muni d'un dispositif associé de génération de messages vocaux

Apparatus and method for operating a self-service checkout terminal having a voice generating device associated therewith

Système et procédé de fonctionnement d'un terminal de caisse d'enregistrement en libre-service muni d'un dispositif associé de génération de...

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CLAIMS A	(English)	200128	1247
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Total Word Count (Document B) 0			
Total Word Count (All Documents) 7745			

Specification: ...A2

The present invention relates generally to a retail checkout **terminal**, and more particularly to an apparatus and method for operating a self-service checkout **terminal** having a **voice** generating device associated therewith.

In the retail industry, the largest expenditures are typically the cost... ...by a customer. To this end, there have been a number of self-service checkout **terminal** concepts developed which attempt to substantially eliminate the need for the retail clerk. In particular, a self-service checkout **terminal** is a system which is operated by a customer without the aid of the retail... ...store, checks out his or items for purchase by use of a self-service checkout **terminal** (including tendering payment for his or her items for purchase), and then exits the store... ...Hence, it should be appreciated that in regard to operation of a self-service checkout **terminal**, the customer scans individual items for purchase across a scanner or weighs items with a... ...The customer then pays for his or her purchases either at the self-service checkout **terminal** if so equipped, or at a central payment area which is staffed by a store employee. Thus, a self-service checkout **terminal** permits a customer to select, itemize, and in some cases pay for his or her... ...customer may have little or no training in the operation of the self-service checkout **terminal** prior to his or her initial use thereof. Hence, it is generally desirable to provide... ...a number of instructions which facilitate the customer's use of the self-service checkout **terminal**. For example, in the case of the operation of a product scanner, it is desirable to instruct the customer as to when the **terminal** is ready to have item information input through the scanner. Moreover, it is desirable to provide the customer with direction in regard to proper operation of the self-service checkout **terminal** if it is determined that the customer is operating the **terminal** improperly. For example, if it is determined that the customer placed an item into a... ...to remove the item from the bag and to cease such improper use of the **terminal**.

However, heretofore utilized methods for providing instruction and/or direction are often difficult for

the customer to understand thereby potentially rendering the customer reluctant to use the **terminal**. If this causes a store employee to constantly be required to assist, investigate, or otherwise.... .the customer's transaction, the labor savings associated with operation of the self-service checkout **terminal** are not realized.

What is needed therefore is a retail checkout **terminal** which overcomes one or more of the above-mentioned drawbacks. What is particularly needed is a self-service checkout **terminal** which provides instruction and direction to a customer in order to facilitate the customer's operation of the retail checkout **terminal** in a "user friendly" manner.

In accordance with a first embodiment of the present invention, there is provided a method of operating a retail **terminal**. The method includes the step of generating a first **voice** instruction in a **first voice type** which instructs a user in regard to operation of the retail **terminal**. The method also includes the step of determining if the user performs a first activity with the retail **terminal** which is indicative of the user responding to the first **voice** instruction and generating a proper-response control signal in response thereto. The method further includes the step of generating a second **voice** instruction in a **second voice type** which instructs the user in regard to operation of the retail **terminal** if a predetermined amount of time lapses subsequent to generation of the first **voice** instruction, but prior to generation of the proper-response control signal.

In accordance with a second embodiment of the present invention, there is provided a retail **terminal**. The retail **terminal** includes a **voice** generating device. The retail **terminal** also includes a processing unit electrically coupled to the **voice** generating device. Moreover, the retail **terminal** further includes a memory device electrically coupled to the processing unit. The memory device has.... .which, when executed by the processing unit, causes the processing unit to (a) operate the **voice** generating device so as to generate a first **voice** instruction in a **first voice type** which instructs a user in regard to operation of the retail **terminal**, (b) determine if the user performs a first activity with the retail **terminal** which is indicative of the user responding to the first **voice** instruction and generate a proper-response control signal in response thereto, and (c) operate the **voice** generating device so as to generate a second **voice** instruction in a **second voice type** which instructs the user in regard to operation of the retail **terminal** if a predetermined amount of time lapses subsequent to generation of the first **voice** instruction, but prior to generation of the proper-response control signal.

In accordance with a third embodiment of the present invention, there is provided a method of operating a retail **terminal**. The method includes the step of generating a first **voice** instruction at a **first voice inflection level** so as to instruct a user in regard to operation of the retail **terminal**. The method also includes the step of determining if the user performs a first activity with the retail **terminal** which is indicative of the user responding to the first **voice** instruction and generating a proper-response control signal in response thereto. Yet further, the method includes the step of generating a second **voice** instruction at a **second voice inflection level** so as to instruct the user in regard to operation of the retail **terminal** if a predetermined amount of time lapses subsequent to generation of the first **voice** instruction, but prior to generation of the proper-response control signal. The **first voice inflection level** is different than the **second voice inflection level**.

It is therefore an object of the present invention to provide a new and useful retail checkout **terminal**.

An embodiment of the present invention will now be described, by way of example, with...
...accompanying drawings, in which:

FIG. 1 is a perspective view of a self-service checkout **terminal** which incorporates the features of the

present invention therein;

FIG. 2 is a simplified block diagram of the self-service checkout terminal of FIG. 1; and

FIG. 3 is a flowchart setting forth a general procedure for checking out items through the self-service checkout terminal of FIG. 1.

While the invention is susceptible to various modifications and alternative forms, a... ...the appended claims.

Referring now to FIG. 1, there is shown a self-service checkout terminal 10 for use in a retail business such as a grocery store. The self-service checkout terminal 10 includes a product scale 12, a scanner 14, a bagwell scale 20, a cardbe provided as components of an automated teller machine (ATM) 24.

The self-service checkout terminal 10 also includes a bagwell 38 for accommodating one or more grocery bags (not shown... ...configuration facilitates a user's (e.g. customer's) use of the self-service checkout terminal 10. Moreover, the bagwell 38 is configured to allow two or more grocery bags to... ...monitor 32 which instructs the customer to enter an item into the self-service checkout terminal 10 by either passing the item over the scanner 14, or placing the item on... ...a grocery bag.

The speaker assembly 60 is provided to broadcast messages such as instructional voice messages. In particular, collectively the processing unit 26 and the speaker assembly 60 define a voice generating device which may be utilized to generate a number of simulated human voices which are broadcast to the customer operating the self-service checkout terminal 10 thereby providing voice instruction to the customer. The voice instructions may be provided as a number of prerecorded voice messages which are stored in a memory device associated with the processing unit 26. Such... ...item of greater value in one of the grocery bags within the bagwell 38, a voice message maybe broadcast with the speaker assembly 60 which instructs the customer to remove the... ...should be appreciated that other types of devices may also be utilized to generate instructional voice messages. For example, the processing unit 26 may execute any known voice synthesizing software which is capable of producing the desired voice messages. Moreover, the self-service checkout terminal 10 may be configured to include a known voice synthesizer which may be utilized as a voice generating device for generating instructional voice messages during operation of the self-service checkout terminal 10. As shall be discussed below in greater detail, certain acoustical characteristics of the simulatedto FIG. 2, there is shown a simplified block diagram of the self-service checkout terminal 10. The processing unit 26 has a terminal memory device 27 associated therewith and is electrically coupled to the product scale 12, the... ...utilized by a customer to input information associated with operation of the self-service checkout terminal 10. It should also be appreciated that numerous other input devices may also be utilized by the customer to input information associated with operation of the self-service checkout terminal 10.

Moreover, the card reader 30 is coupled to the processing unit 26 through a... ...assist the customer in regard to his or her use of the self-service checkout terminal 10. As discussed below in greater detail, certain acoustical characteristics associated with the broadcast voice instructional messages are varied based on the customer's operation of the self-service checkout terminal 10. For example, the volume or voice inflection level of the simulated voice broadcast on the speaker assembly 60 may be varied during repeated instructional voice message broadcasts if the customer ignores or otherwise disregards previously broadcast instructional voice messages.

The processing unit 26 includes network interface circuitry (not shown) which conventionally permits

the self-service checkout **terminal** 10 to communicate with the retailer's network 25 such as a LAN or WAN... ...customer credit approval when appropriate. The network interface circuitry associated with the self-service checkout **terminal** 10 may include a known Ethernet expansion card, and the wired connection 51 may include... ...wireless communications with the retailer's network 25.

The processing unit 26 communicates with the **terminal** memory device 27 via a data bus 53. The **terminal** memory device 27 is provided to maintain an electronic transaction table which includes a record... ...scanned, weighed, or otherwise entered during the customer's use of the self-service checkout **terminal** 10. For example, if the customer scans a can of soup, an item-entered control... ...and the pricing information associated therewith to be recorded in the transaction table in the **terminal** memory device 27. Similarly, if the customer weighs a watermelon with the product scale 12... ...as a known PC sound card which conventionally allows the processing unit 26 to generate **voice** messages which are broadcast on the speaker assembly 60. Moreover, the **terminal** memory device 27 may also be utilized to store a number of prerecorded instructional **voice** messages which are selectively broadcast on the speaker assembly 60 by the processing unit 26 so as to provide **voice** instruction and/or direction to the customer during operation of the self-service checkout **terminal** 10.

Referring now to FIG. 3, there is shown a flowchart which sets forth a general procedure 50 for checking out items through the self-service checkout **terminal** 10. When the customer arrives at the self-service checkout **terminal** 10, the **terminal** 10 is in an idle state (step 52). An initialization step 54 is executed prior...case of when a customer inserts currency into the cash acceptor, the self-service checkout **terminal** 10 may provide change via a currency dispenser (not shown) and a coin dispenser (not... ...step 58, the procedure 50 returns to step 52 in which the self-service checkout **terminal** 10 remains in the idle condition until a subsequent customer initiates a checkout procedure.

During operation of the check out **terminal** 10 in the manner described above, assistance or direction is provided to the user (e.g. the customer) by use of the **voice** generating device (i.e. the combination of the processing unit 26 and the speaker assembly 60). In particular, during operation of the self-service checkout **terminal** 10, it may be necessary to provide instruction to the customer in regard to operation of the **terminal** 10. For example, if the customer attempted to scan an item for purchase with the... ...to capture the bar code associated with the item, the processing unit 26 generates a **voice** instructional message which is broadcast on the speaker assembly 60 so as to be audibly detected by the customer. Similarly, a **voice** instructional message may be broadcast on the speaker assembly 60 which informs the customer to... ...scanned or otherwise entered prior to placing the item into the grocery bag.

The initial **voice** instructional message is broadcast in a **voice** type which is suited for the particular instruction being broadcast. What is meant herein by the term "**voice** type" is a simulated **voice** having predetermined acoustical characteristics which, along with the content of the instructional message, create a... ...the bar code associated with the item was not captured by the scanner 14, the **voice** instruction which instructs the customer to re-scan the item may be broadcast in a relatively quite, matter-of-factly **voice** type which, along with the content of the message, conveys an impression to the customer... ...be re-scanned, there is no immediate concern that the customer is illicitly operating the **terminal**. However, if the customer places an item into one of the grocery bags without having first scanned the item, the **voice** instruction which instructs the customer to remove the item from the grocery bag and thereafter re-scan the item may be broadcast in a relatively loud, stern **voice** type which, along with the content of the message, conveys an impression to the customer... ...the bag and that there exists a concern that the customer is illicitly operating the **terminal**.

It should be appreciated that numerous acoustical characteristics of the simulated **voice** may be varied in order to produce the desired effect or impression on the customer. For example, the volume level at

which the **voice** message is broadcast on the speaker assembly 60 may be varied in order to produce the desired impression on the customer. The **voice** inflection level of the simulated **voice** may be varied in order to produce the desired impression on the customer. What is meant herein by the term "**voice** inflection level" is a combination of the tone level and the pitch level associated with the simulated **voice** of a particular **voice** type. Hence, the **voice** inflection level may be altered in order to create various different **voice** types by altering the pitch level and/or the tone level of the simulated **voice** thereby creating the desired impression on the customer.

Moreover, the "gender" of the **voice** type may be altered to create the desired impression on the customer. For example, if the customer inadvertently enters an incorrect, nonexistent item code into the **terminal** 10, a friendly female **voice** type may be utilized to broadcast the instructional message to the customer which informs the... ...was entered. However, in the case of when the security software agent associated with the **terminal** 10 determines that the customer operated the **terminal** in a manner which is highly suspicious, a relatively terse male **voice** may be utilized to broadcast the instructional message to the customer.

It should be appreciated that the various **voice** types described above are intended to be illustrative in nature and that any number or configuration of **voice** types may be utilized in operation of the **terminal** 10. In particular, any number or configuration of prerecorded instructional messages may be stored in... ...needs of a given retailer. Moreover, in the case of use of other types of **voice** generating devices, any number or configuration of **voice** types may be utilized as limited only by the design limitations of the particular device being used.

Once the initial instructional **voice** message has been broadcast to the customer, the processing unit 26 monitors the customer's... ...given to him or her. In particular, the processing unit 26 monitors output from various **terminal** components such as the scanner 14, the product scale 12, the bagwell scale 20, the... ...is indicative of the customer following the directions given to him or her in the **voice** message.

For example, if the initial instructional **voice** message instructed the customer to enter a product lookup code associated with an item positioned... ...determine if the customer has entered the required lookup code. Moreover, if the initial instructional **voice** message instructed the customer to re-scan an item which the customer previously attempted to... ...should be appreciated that the processing unit 26 may monitor output from more than one **terminal** component in order to determine if the customer has followed the directions given to him or her by the initial **voice** message. For example, if the initial instructional **voice** message instructed the customer to remove an item from one of the grocery bags positioned... ...order to determine if the customer scans the item.

If the customer performs the required **terminal** activity (e.g. re-scans the item or removes the item from the grocery bag... ...response to generation of the proper-response control signal, the processing unit 26 operates the **terminal** 10 in order to allow the customer to continue his or her transaction. For example, in the case of when, at the instruction of the **terminal** 10, the customer properly scans or otherwise enters an item which was previously unentered, generation... ...for during finalization of the customer's transaction. Moreover, it should be appreciated that a **voice** message may also be generated in a positive, congratulatory **voice** type which commends the customer for performing the required **terminal** activity in response to generation of the proper-response control signal.

If the customer does not respond to the initial instructional **voice** message within a predetermined period of time (i.e. a predetermined amount of time lapses subsequent to generation of the initial **voice** message, but prior to generation of the proper-response control signal), the processing unit 26... ...a predetermined period of time of having been instructed to do so, a second instructional **voice** message is

broadcast to the customer which re-instructs the customer to re-scan the item. The second **voice** message may be broadcast in the same **voice** type as the first **voice** message, or may alternatively be broadcast in a **different voice type**. For example, the second **voice** message may be broadcast at a slightly louder volume level than the first **voice** message. Moreover, the second **voice** message may be broadcast at a **voice** inflection level which conveys an impression of greater urgency or seriousness than the **voice** inflection level that was utilized in the broadcast of the first **voice** message.

As with the first **voice** message, the **voice** type of the second **voice** message is configurable to fit the needs of a given retailer. Moreover, the **voice** type utilized to broadcast the second **voice** message is also configurable based on the type of instruction being given to the customer....lookup code for an item of produce resting on the product scale 12, the second **voice** message (and any subsequent **voice** messages) may be broadcast in a relatively friendly, gentle **voice** type since it is likely that the customer is having difficulty locating the correct code....as theft. However, in the case of when the security software agent associated with the **terminal** 10 has determined that the customer is operating the **terminal** 10 in a manner which is indicative of an attempt by the customer to commit an impropriety such as theft, the second **voice** message (and any subsequent **voice** messages) may be broadcast in a relatively terse, stern **voice** type so as to convey the impression of seriousness to the customer.

It should be appreciated that if the customer continues to be unresponsive to the broadcast **voice** messages, subsequent **voice** messages may also be broadcast to the customer. As with the second **voice** message, the **voice** type utilized in the generation of the subsequent **voice** messages may be varied so as to produce the desired impression on the customer. Moreover, if the customer continues to ignore the subsequent **voice** messages, the status light device 11 may be operated so as to summon retail personnel....transaction.

Similar to the case of when the customer does not respond to the instructional **voice** message within a predetermined period of time, is the case of when the customer responds to the instructional **voice** message in an improper manner. In particular, if the initial instructional **voice** message instructs a customer to perform a particular **terminal** activity, but the customer performs a different activity thereby indicating that the customer disregarded the instructional **voice** message, the processing unit 26 generates a follow-up instructional message which re-instructs thethe customer scans another item for purchase with the scanner 14, a follow-up instructional **voice** message is broadcast to the customer which re-instructs the customer to enter the necessary product lookup code. The follow-up **voice** message may be broadcast in the same **voice** type as the first **voice** message, or may alternatively be broadcast in a **different voice type**. For example, the follow-up **voice** message may be broadcast at a slightly louder volume level than the first **voice** message. Moreover, the second **voice** message may be broadcast at a **voice** inflection level which conveys an impression of greater urgency or seriousness than the **voice** inflection level that was utilized in the broadcast of the first **voice** message.

As with the first **voice** message, the **voice** type of the follow-up **voice** message is configurable to fit the needs of a given retailer. Moreover, the **voice** type utilized to broadcast the follow-up **voice** message is also configurable based on the type of instruction being given to the customer....code for an item of produce resting on the product scale 12, the follow-up **voice** message (and any subsequent **voice** messages) may be broadcast in a relatively friendly, gentle **voice** type since it is likely that the customer is not trying to commit an impropriety....as theft. However, in the case of when the security software agent associated with the **terminal** 10 has determined that the customer is operating the **terminal** 10 in a manner which is indicative of an attempt by the customer to commit an impropriety such as theft, the follow-up **voice** message (and any subsequent **voice** messages) may be broadcast in a relatively terse, stern **voice** type so as to convey the impression of seriousness to the customer.

Moreover, an electronic... ...which tracks or otherwise tallies the number of times in which a customer operates the **terminal** 10 improperly. For example, if the customer places an item into one of the grocery... ...operated to summon a customer service manager.

Hence, as described herein, the self-service checkout **terminal** of the present invention provides numerous advantages over heretofore designed terminals. For example, use of a **voice** generating device to broadcast messages in varying **voice** types produces an interface between the customer and the **terminal** 10 which provides an easily understandable media for conveying instruction and direction to the customer.... ...plurality of advantages of the present invention arising from the various features of the checkout **terminal** described herein. It will be noted that alternative embodiments of the checkout **terminal** of the present invention may not include all of the features described yet still benefit.... ...of ordinary skill in the art may readily devise their own implementations of a checkout **terminal** that incorporate one or more of the features of the present invention and fall within.... ...present invention are herein described as being utilized in conjunction with the self-service checkout **terminal** 10, and has significant advantages thereby in the present invention, it should be appreciated that.... ...of the present invention in conjunction with other types of retail terminals. For example, a **voice** generating device which is operable to produce instructional messages in varying **voice** types may be utilized to provide assistance to a retail checkout clerk or the like who is operating an assisted or "clerk-operated" checkout **terminal**. Such use of a **voice** generating device would be particularly useful for assisting new or relatively inexperienced checkout clerks.

Claims: ...A2

1. A method of operating a retail **terminal**, comprising the steps of:

generating a first **voice** instruction in a **first voice type** which instructs a user in regard to operation of said retail **terminal**;

determining if said user performs a first activity with said retail **terminal** which is indicative of said user responding to said first **voice** instruction and generating a proper-response control signal in response thereto; and

generating a second **voice** instruction in a **second voice type** which instructs said user in regard to operation of said retail **terminal** if a predetermined amount of time lapses subsequent to generation of said first **voice** instruction, but prior to generation of said proper-response control signal.

2. A method as... ...comprising the steps of:

determining if said user performs a second activity with said retail **terminal** which is indicative of said user disregarding said first **voice** instruction and generating an improper-response control signal in response thereto; and

generating a third **voice** instruction in a **third voice type** which instructs said user in regard to operation of said retail **terminal** in response to generation of said improper-response control signal.

3. A method as claimed.... ...A method as claimed in any preceding claim, wherein:

said step of generating said first **voice** instruction in said **first voice type** includes the step of generating said first **voice** instruction at a first volume level,

said step of generating said second **voice** instruction in said **second voice type** includes the step of generating said second **voice** instruction at a second volume level, and

said second volume level is greater than said... ...A method as claimed in any preceding claim, wherein:

said step of generating said first **voice** instruction in said **first voice type** includes the step of generating said first **voice** instruction at a first **voice** inflection level,

said step of generating said second **voice** instruction in said **second voice type** includes the step of generating said second **voice** instruction at a second **voice** inflection level, and

said first **voice** inflection level is different than said second **voice** inflection level.

6. A method as claimed in any preceding claim, wherein:

said **first voice type** is configured to resemble a human female **voice**, and

said **second voice type** is configured to resemble a human male **voice**.

7. A method as claimed in any preceding claim, wherein:

said step of generating said first **voice** instruction in said **first voice type** includes the step of generating said first **voice** instruction at a first **voice** pitch level,

said step of generating said second **voice** instruction in said **second voice type** includes the step of generating said second **voice** instruction at a second **voice** pitch level, and

said first **voice** pitch level is different than said second **voice** pitch level.

8. A method as claimed in any preceding claim, wherein:

said step of generating said first **voice** instruction in said **first voice type** includes the step of generating said first **voice** instruction at a first **voice** tone level,

said step of generating said second **voice** instruction in said **second voice type** includes the step of generating said second **voice** instruction at a second **voice** tone level, and

said first **voice** tone level is different than said second **voice** tone level.

9. A retail **terminal**, comprising:

a **voice** generating device;

a processing unit electrically coupled to said **voice** generating device; and

a memory device electrically coupled to said processing unit, wherein said memory... ...which, when executed by said processing unit, causes said processing unit to:

(a) operate said **voice** generating device so as to generate a first **voice** instruction in a **first voice type**

which instructs a user in regard to operation of said retail **terminal**,

(b) determine if said user performs a first activity with said retail **terminal** which is indicative of said user responding to said first **voice** instruction and generate a proper-response control signal in response thereto, and

(c) operate said **voice** generating device so as to generate a second **voice** instruction in a **second voice type** which instructs said user in regard to operation of said retail **terminal** if a predetermined amount of time lapses subsequent to generation of said first **voice** instruction, but prior to generation of said proper-response control signal.

10. A retail **terminal** as claimed in claim 9, wherein said plurality of instructions, when executed by said processing... ...processing unit to:

(a) determine if said user performs a second activity with said retail **terminal** which is indicative of said user disregarding said first **voice** instruction and generate an improper-response control signal in response thereto, and

(b) operate said **voice** generating device so as to generate a third **voice** instruction in a **third voice type** which instructs said user in regard to operation of said retail **terminal** in response to generation of said improper-response control signal.

11. The retail **terminal** as claimed in claim 9 or claim 10, wherein said plurality of instructions, when executed... ...said electronic log value has a predetermined relationship with said log threshold.

12. A retail **terminal** as claimed in any of claims 9 to 11, wherein said plurality of instructions, when executed by said processing unit, further causes said processing unit to:

(a) operate said **voice** generating device so as to generate said first **voice** instruction at a first volume level, and

(b) operate said **voice** generating device so as to generate said second **voice** instruction at a second volume level, wherein said second volume level is greater than said first volume level.

13. A retail **terminal** as claimed in any of claims 9 to 12, wherein said plurality of instructions, when executed by said processing unit, further causes said processing unit to:

(a) operate said **voice** generating device so as to generate said first **voice** instruction at a first **voice inflection level**, and

(b) operate said **voice** generating device so as to generate said second **voice** instruction at a second **voice inflection level**, wherein said first **voice inflection level** is different than said second **voice inflection level**.

14. A retail **terminal** as claimed in any of claims 9 to 13, wherein:

said **first voice type** is configured to resemble a human female **voice**, and

said **second voice type** is configured to resemble a human male **voice**.

15. A retail **terminal** as claimed in any of claims 9 to 14, wherein said plurality of instructions, when executed by said processing unit, further causes said processing unit to:

(a) operate said **voice** generating device so as to generate said first **voice** instruction at a **first voice pitch** level, and

(b) operate said **voice** instruction device so as to generate said second **voice** instruction at a **second voice pitch** level, wherein said **first voice pitch** level is different than said **second voice pitch** level.

16. A retail **terminal** as claimed in any of claims 9 to 15, wherein said plurality of instructions, when executed by said processing unit, further causes said processing unit to:

(a) operate said **voice** generating device so as to generate said first **voice** instruction at a **first voice tone** level, and

(b) operate said **voice** generating device so as to generate said second **voice** instruction at a **second voice tone** level, wherein said **first voice tone** level is different than said **second voice tone** level.

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Portable terminal and on-vehicle information processing device

Tragbares Endgerat und fahrzeuginterne Informationsverarbeitungsvorrichtung

Terminal portatif et dispositif de traitement d'informations embarque

Portable **terminal** and on-vehicle information processing device

Terminal portatif et dispositif de traitement d'informations embarque

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Specification: ...vehicle information processing device, and more particularly to an on-vehicle device and a portable **terminal** for providing information. 2. Description of Related Art

Various computer-based systems for supplying information... ...including a speaker and a microphone. Reception of paging information as well as acquisition of voice notes is also possible through the face plate module. Electrical power is supplied from an... ...a system which achieves further functional cooperation between an on-vehicle device and a portable **terminal** and can provide navigation functionality in a more user-friendly manner.

To this end, a portable **terminal** in accordance with the present invention, which is capable of being connected to an on... ...data from/to an information center in accordance with connected/disconnected states of the portable **terminal** with respect to the on-vehicle device, in which, when the portable **terminal** is in a disconnected state, displays data on said display based on data obtained from... ...during an earlier connected state.

Preferably, said bi-directional data communication device, when the portable **terminal** is connected with the on-vehicle device, transmits information representing the connected state to the information center. Further, the bi-directional data communication device, when the portable **terminal** is connected with the on-vehicle device, may transmit audio data supplied from said on... ...communication device may receive/transmit audio data to/from the information center while the portable **terminal** is connected to the on-vehicle device, and receive/transmit non-audio data with respect to the information center while the portable **terminal** is disconnected from the on-vehicle device. When the portable **terminal** is disconnected from the on-vehicle device, the bi-directional communication device may show map data obtained from the on-vehicle device on the display while the portable **terminal** is connected therewith.

In accordance with another aspect of the present invention, there is provided... ...vehicle information processing device comprising an interface to be connected with the above-mentioned portable **terminal**, and a processor for processing data supplied from said portable **terminal**.

Preferably, the on-vehicle information processing device further comprises a detector for detecting a current... ...processor executes navigation function based on said current position and data supplied from said portable **terminal**. The on-vehicle information processing device further comprises a microphone and a speaker, and said processor transmits sound input through said microphone to the portable **terminal** and outputs the audio data supplied from the portable **terminal** through the speaker. The on-vehicle information processing device may further comprise means for supplying electrical power to said portable **terminal**. When the current vehicle position detected is near a selected destination, said processor provides the portable **terminal** with map data showing the vicinity of the destination. When the current vehicle position detected... ...also transmits data indicating that the vehicle has arrived near the destination, to the portable **terminal**. Further, when the on-vehicle device is connected with the portable **terminal**, the processor transmits data indicating the connected state to the information center via the portable information **terminal** device.

According to the present invention, the portable **terminal**, when disconnected from the on-vehicle information processing device, solely functions to receive/transmit data... ...device for communicating with the on-vehicle information processing device, such that when the portable **terminal** functions as an independent unit, it receives/transmits predetermined data from/to a remote information... ...When, on the other hand, connected with the on-vehicle information processing device, the portable **terminal** can utilize functions provided by the on-vehicle device, to thereby achieve a higher level... ...information processing device for processing. The acquired data may also be displayed on the portable **terminal**. For example, when map data is acquired from the information center or the like to execute navigation function, the portable **terminal** may serve as a navigation screen for displaying the map data and guidance routes. Whenand a user leaves the vehicle to proceed to the destination on foot, the portable **terminal** is disconnected from the on-vehicle information processing device. Because the

portable **terminal** has been provided with necessary data from the on-vehicle information processing device while being connected thereto, the user can reach the destination while relying on only the portable **terminal**. Further, when the portable **terminal** is provided with power from the on-vehicle information processing device while it is connected with the on-vehicle device, power deficiency while the portable **terminal** is being carried can be avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects... Referring to Fig. 1, a system structure is shown in a state where a portable **terminal** and an on-vehicle information processing device are connected.

The on-vehicle information processing device... compressed using the MPEG1 data compression format. The MP3 data is obtained by the portable **terminal** 22 via the Internet, for example, and is supplied to the on-vehicle information processing... to the USB, RS232C, RS232E, or IEEE1394 standards, receives/transmits data from/to the portable **terminal** 22. The portable **terminal** 22, when placed on a cradle 24 connected to the interface I/F 10a, can... such that electrical power is supplied from the power supply circuit to charge the portable **terminal** 22 when it is placed on the cradle. (+B represents a power supply line in Fig. 1)

Upon detecting that the portable **terminal** 22 is placed on the cradle 24 and is connected to the on-vehicle device 10, the CPU processes data supplied from the portable **terminal** 22 and provides the processed data back to the portable **terminal** 22 via the I/F 10a and the cradle 24. When map data is supplied from the portable **terminal** 22, the on-vehicle device executes navigation function based on the current position detected by... information processing device 10 supplies audio data input through the microphone 16 to the portable **terminal** 22 and outputs audio data supplied from the portable **terminal** 10 through the speaker 18. Although the audio data input through the microphone 16 may be directly supplied to the portable **terminal** 22, audio recognition may be applied in the CPU such that the recognition results are supplied to the portable **terminal** 22. When MP3 data is supplied from the portable **terminal** 22, the data is demodulated by the MP3 decoder before being output from the speaker 18 as audio data. The demodulated audio data may also be output from an output **terminal** (not shown) to other audio devices or the like. The on-vehicle information processing device... main display screen for the on-vehicle information device 10 is provided in the portable **terminal** 22, such that data processed in the on-vehicle information processing device 10 is supplied to the portable **terminal** 22 and is displayed on the display thereof.

The portable **terminal** 22, on the other hand, comprises a power supply circuit, an interface I/F 22a... is charged with power from the on-vehicle information processing device 10 when the portable **terminal** 22 is placed on the cradle 24 to thereby be connected with the on-vehicle information **terminal** device 10.

The interface I/F 22a receives/transmits data with regard to the interface... RS232E, or IEEE394 standards.. Although normally digital data is exchanged during communication between the portable **terminal** 22 and the on-vehicle information processing device 10, audio data may also be transmitted... the antenna into digital data, which is then supplied to the CPU of the portable **terminal** 22 or to the on-vehicle information processing device 10.

The CPU, detecting that the portable **terminal** 22 is placed on the cradle 24 and is connected with the on-vehicle information... transmitting such data to the information center via the MODEM and the antenna. The portable **terminal** 22 also comprises a microphone and a speaker (not shown) as in a general portable... the on-vehicle information processing device 10 and stored in the memory. When

the portable **terminal** 22 is disconnected from the on-vehicle information processing device 10, the display shows data... ...information processing device 10 and stored in the memory before disconnection, namely while the portable **terminal** was connected to the information processing device 10.

In the system thus configured, an example.... Fig. 2, a system conceptual view of an information center which communicates with the portable **terminal** 22 shown in Fig. 1 is depicted. The information center includes a plurality of servers... ...4.

Referring to Figs. 3 and 4, how data is received/transmitted between the portable **terminal** 22 and the information center when executing navigation function is depicted in time series. The portable **terminal** 22 is placed on the cradle 24 and is therefore connected with the on-vehicle information processing device 10. When the portable **terminal** 22 is placed on the cradle 24, the CPU of the on-vehicle information processing device 10 or the CPU of the portable **terminal** 22 detects the connected state and sends the ID or the password PASS of the... ...information processing device 10 to the information center using the telephone function of the portable **terminal** 22. At this point, it is preferable that communication status or information indicating the connection... ...like for supplying to the user. Receiving the data from the information center, the portable **terminal** 22 supplies the received data to the on-vehicle information processing device 10, which then.... vehicle information processing device 10 supplies the user's input audio data to the portable **terminal** 22, which then transmits the data to the information center. The information center, upon receiving.... retrieves data related to the request, and then transmits the received data to the portable **terminal** 22. While data is being searched, it is preferable to inform the user of the... ...text or audio data. The text data is displayed on the display of the portable **terminal** 22; in Fig. 3, options including "recommended route", "arrive as soon as possible" and "no.... through the microphone 16 or by inputting a reply into a keypad of the portable **terminal** 22, the portable **terminal** 22 transmits this preference data to the information center. The information center then searches for.... user ID, password, communication status, or connection mode. The route data received by the portable **terminal** 22 is supplied to the on-vehicle information processing device 10, which superposes the current... ...further superposing the guidance route to the destination, and supplies the data to the portable **terminal** 22 for display. If the portable **terminal** 22 has sufficient memory and processing speed, the portable **terminal** 22 may receive the current position of the vehicle from the on-vehicle information processing.... speed or the like) of the vehicle or the current position data to the portable **terminal** 22 at predetermined intervals (of time or distance), such that the portable **terminal** 22 transmits the data to the information center for the user's understanding.

When the.... an accident or traffic congestion occurs along the route, the information center provides the portable **terminal** 22 with new event information. The user may at this time request a new route through the microphone 16 or using the keypad of the portable **terminal** 22. The information center searches for a new route in accordance with the request and provides the results. The portable **terminal** 22 then transmits the data supplied from the information center to the on-vehicle information.... as data regarding the restaurant (menu or an image of the shop) to the portable **terminal** 22, which stores the supplied data in the memory and displays the map data on the display. Thus, even when the portable **terminal** 22 is detached from the cradle 24, the user can easily refer to the map.... an intended destination. The user can reach the intended destination more easily if the portable **terminal** 22 is provided with a GPS system for indicating the user's position on the.... parking lot near the destination, supplies the map data around the destination to the portable **terminal** 22 using this detection as a trigger. Alternatively, the portable **terminal** 22, upon receiving an indication that the vehicle has arrived at the parking lot near.... information processing device 10, when providing the map data around the destination to the portable **terminal** 22, also provides data on the current position at that time, namely the position where the user removes the portable **terminal** 22 from the on-vehicle information processing device, so that a route back to the.... user through, for example, the microphone 16 be

stored in the memory of the portable **terminal** 22. This will better ensure that the user will be able to find his/her... ...foregoing embodiment, the state where the on-vehicle information processing device 10 and the portable **terminal** 22 are connected with each other is established when the portable **terminal** 22 is placed on the cradle 24. It is possible, however, that the connected state... ...transmission/reception is performed between the on-vehicle information processing device 10 and the portable **terminal** 22, is established when an ignition key of the vehicle turns ACC on, whereas when it turns ACC off the disconnected state is established and the portable **terminal** 22 functions solely. During the disconnected state, data indicating that the portable **terminal** 22 is connected with the on-vehicle information processing device 10 (referred to as "NAVI... ...data, electronic mail data, non-audio navigation route data, or the like. Further, the portable **terminal** 22, which serves as an ordinary portable telephone during the disconnected state, can function as... ...described above, according to the present invention, it is possible to effectively use a portable **terminal** in operation with an on-vehicle device to thereby provide navigation function which is further... ...specification, claims, drawings and summary are incorporated herein by reference in its entirety.

A portable **terminal** and an on-vehicle device are combined such that effective navigation can be provided. The portable **terminal** provided with communication function is connected with the on-vehicle information processing device when placed on a cradle. The portable **terminal** transmits a destination to an information center, and shows obtained route data on a display... ...speaker. On arriving near the destination, the on-vehicle information processing device provides the portable **terminal** with map data for the vicinity of the destination. A user can remove the portable **terminal** from the cradle and reach the destination while viewing a map shown on the display of the portable **terminal**.

Specification: ...vehicle information processing device, and more particularly to an on-vehicle device and a portable **terminal** for providing information. 2. Description of Related Art

Various computer-based systems for supplying information... ...including a speaker and a microphone. Reception of paging information as well as acquisition of **voice** notes is also possible through the face plate module. Electrical power is supplied from an... ...adapted to obtain text data and read aloud the text data aloud by using a **voice** synthesizer. A loudspeaker device is connected to the message processing device to output or read... ...through a receiving device that receives outside information data or e-mail message data. The **voice** synthesizer can be controlled by an outside information controller, with the outside information controller being able to distinguish senders of the text data and being able to select one **voice** tone data to read aloud messages sent by one sender. If the controller recognizes that there are other messages sent by another sender, the controller allots **different voice tone** data for the other sender's messages. The message processing device can include a **voice** navigation device to generate **voice** signals for giving route guidance messages or information to a driver of a vehicle. The **voice** tone used for the route guidance message is preferably different from the **voice** tone used to read aloud the outside information message. It is thus possible for the... ...schedule, in which a variety of transportation means are used, in a vehicle-installed data **terminal** and a personal digital assistant (PDA) such as a palm top computer, and enable the... ...the PDA transmits the tour schedule to a data processor in the vehicle-installed data **terminal**, which extracts and retains data related to the vehicle from the tour schedule. When a current position denotes transportation by the vehicle, a navigation unit of the vehicle-installed data **terminal** guides the vehicle. At the end of the guidance, the data processor of the vehicle-installed data **terminal** starts the PDA.

The PDA then performs guidance. The PDA is removed from the recess... ...a system which achieves further functional cooperation between an on-vehicle device and a portable **terminal** and can provide navigation functionality in a more user-friendly manner.

This aim is achieved by a portable **terminal** and/or an on-vehicle information processing device as outlined in the attached claims.

BRIEF... Referring to Fig. 1, a system structure is shown in a state where a portable **terminal** and an on-vehicle information processing device are connected.

The on-vehicle information processing device... compressed using the MPEG1 data compression format. The MP3 data is obtained by the portable **terminal** 22 via the Internet, for example, and is supplied to the on-vehicle information processing... to the USB, RS232C, RS232E, or IEEE1394 standards, receives/transmits data from/to the portable **terminal** 22. The portable **terminal** 22, when placed on a cradle 24 connected to the interface I/F 10a, can... such that electrical power is supplied from the power supply circuit to charge the portable **terminal** 22 when it is placed on the cradle. (+B represents a power supply line in Fig. 1)

Upon detecting that the portable **terminal** 22 is placed on the cradle 24 and is connected to the on-vehicle device 10, the CPU processes data supplied from the portable **terminal** 22 and provides the processed data back to the portable **terminal** 22 via the I/F 10a and the cradle 24. When map data is supplied from the portable **terminal** 22, the on-vehicle device executes navigation function based on the current position detected by... information processing device 10 supplies audio data input through the microphone 16 to the portable **terminal** 22 and outputs audio data supplied from the portable **terminal** 10 through the speaker 18. Although the audio data input through the microphone 16 may be directly supplied to the portable **terminal** 22, audio recognition may be applied in the CPU such that the recognition results are supplied to the portable **terminal** 22. When MP3 data is supplied from the portable **terminal** 22, the data is demodulated by the MP3 decoder before being output from the speaker 18 as audio data. The demodulated audio data may also be output from an output **terminal** (not shown) to other audio devices or the like. The on-vehicle information processing device... main display screen for the on-vehicle information device 10 is provided in the portable **terminal** 22, such that data processed in the on-vehicle information processing device 10 is supplied to the portable **terminal** 22 and is displayed on the display thereof.

The portable **terminal** 22, on the other hand, comprises a power supply circuit, an interface I/F 22a... is charged with power from the on-vehicle information processing device 10 when the portable **terminal** 22 is placed on the cradle 24 to thereby be connected with the on-vehicle information **terminal** device 10.

The interface I/F 22a receives/transmits data with regard to the interface... RS232E, or IEEE394 standards. Although normally digital data is exchanged during communication between the portable **terminal** 22 and the on-vehicle information processing device 10, audio data may also be transmitted... the antenna into digital data, which is then supplied to the CPU of the portable **terminal** 22 or to the on-vehicle information processing device 10.

The CPU, detecting that the portable **terminal** 22 is placed on the cradle 24 and is connected with the on-vehicle information... transmitting such data to the information center via the MODEM and the antenna. The portable **terminal** 22 also comprises a microphone and a speaker (not shown) as in a general portable... the on-vehicle information processing device 10 and stored in the memory. When the portable **terminal** 22 is disconnected from the on-vehicle information processing device 10, the display shows data... information processing device 10 and stored in the memory before disconnection, namely while the portable **terminal** was connected to the information processing device 10.

In the system thus configured, an example... Fig. 2, a system conceptual view of an information center which communicates with the portable **terminal** 22 shown in Fig. 1 is depicted. The information center includes a plurality of servers... 4.

Referring to Figs. 3 and 4, how data is received/transmitted between the portable **terminal** 22 and the information center when executing navigation function is depicted in time series. The portable **terminal** 22 is placed on the cradle 24 and is therefore connected with the on-vehicle information processing device 10. When the portable **terminal** 22 is placed on the cradle 24, the CPU of the on-vehicle information processing device 10 or the CPU of the portable **terminal** 22 detects the connected state and sends the ID or the password PASS of the... information processing device 10 to the information center using the telephone function of the portable **terminal** 22. At this point, it is preferable that communication status or information indicating the connection... like for supplying to the user. Receiving the data from the information center, the portable **terminal** 22 supplies the received data to the on-vehicle information processing device 10, which then... vehicle information processing device 10 supplies the user's input audio data to the portable **terminal** 22, which then transmits the data to the information center. The information center, upon receiving... retrieves data related to the request, and then transmits the received data to the portable **terminal** 22. While data is being searched, it is preferable to inform the user of the... text or audio data. The text data is displayed on the display of the portable **terminal** 22; in Fig. 3, options including "recommended route", "arrive as soon as possible" and "no... through the microphone 16 or by inputting a reply into a keypad of the portable **terminal** 22, the portable **terminal** 22 transmits this preference data to the information center. The information center then searches for... user ID, password, communication status, or connection mode. The route data received by the portable **terminal** 22 is supplied to the on-vehicle information processing device 10, which superposes the current... further superposing the guidance route to the destination, and supplies the data to the portable **terminal** 22 for display. If the portable **terminal** 22 has sufficient memory and processing speed, the portable **terminal** 22 may receive the current position of the vehicle from the on-vehicle information processing... speed or the like) of the vehicle or the current position data to the portable **terminal** 22 at predetermined intervals (of time or distance), such that the portable **terminal** 22 transmits the data to the information center for the user's understanding.

When the.... an accident or traffic congestion occurs along the route, the information center provides the portable **terminal** 22 with new event information. The user may at this time request a new route through the microphone 16 or using the keypad of the portable **terminal** 22. The information center searches for a new route in accordance with the request and provides the results. The portable **terminal** 22 then transmits the data supplied from the information center to the on-vehicle information... as data regarding the restaurant (menu or an image of the shop) to the portable **terminal** 22, which stores the supplied data in the memory and displays the map data on the display. Thus, even when the portable **terminal** 22 is detached from the cradle 24, the user can easily refer to the map.... an intended destination. The user can reach the intended destination more easily if the portable **terminal** 22 is provided with a GPS system for indicating the user's position on the... parking lot near the destination, supplies the map data around the destination to the portable **terminal** 22 using this detection as a trigger. Alternatively, the portable **terminal** 22, upon receiving an indication that the vehicle has arrived at the parking lot near... information processing device 10, when providing the map data around the destination to the portable **terminal** 22, also provides data on the current position at that time, namely the position where the user removes the portable **terminal** 22 from the on-vehicle information processing device, so that a route back to the... user through, for example, the microphone 16 be stored in the memory of the portable **terminal** 22. This will better ensure that the user will be able to find his/her.... foregoing embodiment, the state where the on-vehicle information processing device 10 and the portable **terminal** 22 are connected with each other is established when the portable **terminal** 22 is placed on the cradle 24. It is possible, however, that the connected state... transmission/reception is performed between the on-vehicle information processing device 10 and the portable **terminal** 22, is

established when an ignition key of

Further, in the example used in the foregoing embodiment, the state where the on-vehicle information processing device 10 and the portable **terminal** 22 are connected with each other is established when the portable **terminal** 22 is placed on the cradle 24. It is possible, however, that the connected state...
...transmission/reception is performed between the on-vehicle information processing device 10 and the portable **terminal** 22, is established when an ignition key of the vehicle turns ACC on, whereas when it turns ACC off the disconnected state is established and the portable **terminal** 22 functions solely. During the disconnected state, data indicating that the portable **terminal** 22 is connected with the on-vehicle information processing device 10 (referred to as "NAVI.... data, electronic mail data, non-audio navigation route data, or the like. Further, the portable **terminal** 22, which serves as an ordinary portable telephone during the disconnected state, can function as.... described above, according to the present invention, it is possible to effectively use a portable **terminal** in operation with an on-vehicle device to thereby provide navigation function which is further...

Claims:

1. A portable **terminal** which is capable of being connected to an on-vehicle device, comprising:
a bi-directional.... data from/to an information center in accordance with connected/disconnected states of the portable **terminal** with respect to the on-vehicle device, said processor, when the portable **terminal** is disconnected from the on-vehicle device, displaying data on said display based on data obtained from the on-vehicle device when the portable **terminal** is in a connected state.
2. A portable **terminal** according to claim 1, wherein said bi-directional data communication device receives map data from the information center.
3. A portable **terminal** according to claim 1, wherein when the portable **terminal** is connected with the on-vehicle device, said bi-directional data communication device transmits information representing the connected state to the information center.
4. A portable **terminal** according to claim 1, wherein when the portable **terminal** is connected with the on-vehicle device, the bi-directional data communication device transmits audio data obtained from said on-vehicle device to said information center.
5. A portable **terminal** according to claim 1, wherein the bi-directional data communication device transmits data received from the information center to the on-vehicle device when the portable **terminal** is connected with the on-vehicle device.
6. A portable **terminal** according to claim 1, wherein the bi-directional communication device transmits running data supplied from the on-vehicle device to the information center when the portable **terminal** is connected with the on-vehicle device.
7. A portable **terminal** according to claim 1, wherein when the portable **terminal** is disconnected from the on-vehicle device, said display shows map data obtained from the on-vehicle device during a connected state.
8. A portable **terminal** according to claim 1, wherein said portable **terminal** functions as a portable telephone when it is disconnected from said on-vehicle device.

9. A portable **terminal** according to claim 1, wherein the bi-directional communication device receives/transmits audio data to/from the information center when the portable **terminal** is connected to the on-vehicle device, and receives/transmits non-audio data with respect to the information center when the portable **terminal** is disconnected from the on-vehicle device.

10. An on-vehicle information processing device comprising:

an interface to be connected with the portable **terminal** of claim 1; and

a processor for processing data supplied from said portable **terminal**.

11. An on-vehicle information processing device according to claim 10, further comprising a detector...
...processor executes navigation function based on said current position and data supplied from said portable **terminal**.

12. An on-vehicle information processing device according to claim 10 further comprising a microphone and a speaker,

wherein said processor transmits sound input through said microphone to the portable terminal and outputs audio data supplied from the portable terminal through the speaker.

13. An on-vehicle information processing device according to claim 10 further comprising means for supplying electrical power to said portable **terminal**.

14. An on-vehicle information processing device according to claim 11,

wherein, when the detected current position is near a destination, said processor provides the portable terminal with map data showing the vicinity of the destination.

15. An on-vehicle information processing.... ...processor transmits data indicating that the vehicle has arrived near the destination, to the portable **terminal**.

16. An on-vehicle information processing device according to claim 11,

wherein, when the current.... ...is near a destination, the processor supplies data regarding the current position to the portable terminal.

17. An on-vehicle information processing device according to claim 10,

wherein, when the on-vehicle information processing device is connected to the portable terminal, the processor transmits data indicating the connected state to the information center via the portable information terminal device.

Claims: ...B1

1. A portable **terminal** (22) which is capable of being connected to an on-vehicle device (10), comprising:

a.... ...to an information center (Fig. 2) in accordance with connected/disconnected states of the portable

terminal (22) with respect to the on-vehicle device (10), said processor, when the portable **terminal** (22) is disconnected from the on-vehicle device (10), displaying data on said display based on data obtained from the on-vehicle device (10) when the portable **terminal** (22) is in a connected state; characterized in that

when the portable terminal (22) is connected with the on-vehicle device (10), the bi-directional data communication device... ...from said on-vehicle device (10) to said information center (Fig. 2).

2. A portable **terminal** (22) according to claim 1, characterized in that said bi-directional data communication device receives map data from the information center (Fig. 2).

3. A portable **terminal** (22) according to claim 1, characterized in that when the portable **terminal** (22) is connected with the on-vehicle device (10), said bi-directional data communication device transmits information representing the connected state to the information center (Fig. 2).

4. A portable **terminal** (22) according to claim 1, characterized in that the bi-directional data communication device transmits... ...from the information center (Fig. 2) to the on-vehicle device (10) when the portable **terminal** (22) is connected with the on-vehicle device (10).

5. A portable **terminal** (22) according to claim 1, characterized in that the bi-directional communication device transmits running... ...from the on-vehicle device (10) to the information center (Fig. 2) when the portable **terminal** (22) is connected with the on-vehicle device (10).

6. A portable **terminal** (22) according to claim 1, characterized in that when the portable **terminal** (22) is disconnected from the on-vehicle device (10), said display shows map data obtained from the on-vehicle device (10) during a connected state.

7. A portable **terminal** (22) according to claim 1, characterized in that said portable **terminal** (22) functions as a portable telephone when it is disconnected from said on-vehicle device (10).

8. A portable **terminal** (22) according to claim 1, characterized in that the bi-directional communication device receives/transmits audio data to/from the information center (Fig. 2) when the portable **terminal** (22) is connected to the on-vehicle device (10), and receives/transmits non-audio data with respect to the information center (Fig. 2) when the portable **terminal** (22) is disconnected from the on-vehicle device (10).

9. An on-vehicle information processing device comprising:

an interface to be connected with the portable **terminal** (22) of claim 1;

a processor for processing data supplied from said portable **terminal** (22);

a microphone (16); and

a speaker (18); characterized in that

said processor transmits sound input through said microphone (16) to the portable terminal (22) and outputs audio data supplied from the portable terminal (22) through the speaker (18).

10. An on-vehicle information processing device according to claim 9, characterized by means for supplying electrical power to said portable **terminal** (22).
11. An on-vehicle information processing device according to claim 9, characterized in that, when the detected current position is near a destination, said processor provides the portable **terminal** (22) with map data showing the vicinity of the destination.
12. An on-vehicle information processing device according to claim 10, characterized in that, when the vehicle has arrived near the destination, to the portable **terminal** (22).
13. An on-vehicle information processing device according to claim 10, characterized in that, when the vehicle has arrived near the destination, the processor supplies data regarding the current position to the portable **terminal** (22).

14. An on-vehicle information processing device according to claim 10, characterized in that, when the vehicle has arrived near the destination, the processor transmits data indicating the connected state to the information center (Fig. 2) via the portable **information terminal** device.
15. An on-vehicle information processing device according to claim 9, characterized in that, when the on-vehicle information processing device is connected to the portable **terminal** (22), the processor transmits data indicating the connected state to the information center (Fig. 2) via the portable **information terminal** device.

Claims: ...B1

1. **Terminal portatif** (22) pouvant etre connecte a une dispositif embarque (10), comprenant :
un dispositif de communicationpartir de/vers un centre d'information (figure 2) selon les etats connecte/deconnecte du **terminal** portatif (22) vis-a-vis du dispositif embarque (10), ledit processeur, lorsque le **terminal** portatif (22) est deconnecte du dispositif embarque (10), affichant des donnees sur ledit dispositif d'affichage selon les donnees transmises par le dispositif embarque (10) lorsque le **terminal** portatif (22) est dans un etat connecte ; caracterise en ce que lorsque le terminal portatif (22) est connecte au dispositif embarque (10), le dispositif de communication des donnees bidirectionnel.... audio transmises par ledit dispositif embarque (10) au dit centre d'information (figure 2).
2. **Terminal portatif** (22) selon la revendication 1, caracterise en ce que ledit dispositif de communication des donnees bidirectionnel reçoit des renseignements cartographiques du centre d'information (figure 2).
3. **Terminal portatif** (22) selon la revendication 1, caracterise en ce que, lorsque le **terminal** portatif (22) est connecte au dispositif embarque (10), ledit dispositif de communication de donnees bidirectionnel transmet les informations indiquant l'etat connecte au centre d'information (figure 2).
4. **Terminal portatif** (22) selon la revendication 1, caracterise en ce que le dispositif de communication de... ...donnees transmises par le centre d'information (figure 2) au dispositif embarque (10) lorsque le **terminal** portatif (22) est connecte au dispositif embarque (10).
5. **Terminal portatif** (22) selon la revendication 1, caracterise en ce que le dispositif de communication bidirectionnel.... cours transmises par le dispositif embarque (10) au centre d'information (figure 2) lorsque le **terminal** portatif (22) est connecte au dispositif embarque (10).

6. **Terminal portatif** (22) selon la revendication 1, caracterise en ce que, lorsque le **terminal portatif** (22) est deconnecte du dispositif embarque (10), ledit dispositif d'affichage affiche des donnees de cartographie transmises par le dispositif embarque (10) au cours d'un etat connecte.

7. **Terminal portatif** (22) selon la revendication 1, caracterise en ce que le **terminal portatif** (22) fonctionne comme un telephone portable lorsqu'il est deconnecte dudit dispositif embarque (10).

8. **Terminal portatif** (22) selon la revendication 1, caracterise en ce que le dispositif de communication bidirectionnel recoit/transmet des donnees audio du/au centre d'information (figure 2) lorsque le **terminal portatif** (22) est connecte au dispositif embarque (10), et recoit/transmet des donnees non audio du/au centre d'information (figure 2) lorsque le **terminal portatif** (22) est deconnecte du dispositif embarque (10).

9. Dispositif embarque de traitement de l'information comprenant :

une interface a connecter au **terminal portatif** (22) de la revendication 1 ;

un processeur pour traiter les donnees transmises par ledit **terminal portatif** (22) ;

un microphone (16) ; et

un haut-parleur (18) ; caracterise en ce que

ledit processeur transmet le son recu via ledit microphone (16) au terminal portatif (22) et emet les donnees audio transmises par le terminal portatif (22) via le haut-parleur (18).

10. Dispositif embarque de traitement de l'information.... ...une operation de navigation basee sur la position courante et les donnees transmises par ledit **terminal portatif** (22).

11. Dispositif embarque de traitement de l'information selon la revendication 9, caracterise par un moyen permettant d'alimenter en electricite ledit **terminal portatif** (22).

12. Dispositif embarque de traitement de l'information selon la revendication 10, caracterise.... ...que, lorsque la position courante detectee est proche du lieu recherche, ledit processeur transmet au **terminal portatif** (22) des donnees de cartographie indiquant la proximite du lieu recherche.

13. Dispositif embarque.... ...position courante du vehicule detectee est proche d'un lieu recherche, ledit processeur transmet au **terminal portatif** (22) des donnees indiquant que le vehicule est arrive pres du lieu recherche.

14.... ...position courante du vehicule detectee est proche d'un lieu recherche, le processeur fournit au **terminal portatif** (22) des donnees concernant la position courante.

15. Dispositif embarque de traitement de l.... ...en ce que, lorsque le dispositif embarque de traitement de l'information est connecte au **terminal portatif** (22), le processeur transmet au centre d'information (figure 2) des donnees indiquant l'etat connecte via le dispositif du **terminal d'information portatif**.

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Message processing system and method for processing messages
Nachrichtenverarbeitungssystem und Verfahren fur die Verarbeitung von Nachrichten
Système de traitement de messages et méthode pour le traitement de messages

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G01C-0021/20	A	I	F	B	20060101	20060918	H	EP
G01C-0021/36	A	I	L	B	20060101	20060918	H	EP
H04L-0012/58	A	I	L	B	20060101	20060918	H	EP
G10L-0013/02	A	I	L	B	20060101	20060918	H	EP
G01L-0013/04	A	I	L	B	20060101	20060918	H	EP

Abstract ...adapted to obtain text data and read aloud the text data aloud by using a **voice** synthesizer. A loudspeaker device (16) is connected to the message processing device to output or... ...a receiving device (11) that receives outside information data or e-mail message data. The **voice** synthesizer (17) can be controlled by an outside information controller (13), with the outside information... ...being able to distinguish senders of the text data and being able to select one **voice** tone data to read aloud messages sent by one sender. If the controller (13) recognizes that there are other messages sent by another sender, the controller (13) allots **different voice tone** data for the other sender's messages. The message processing device (33) can include a **voice** navigation device (34) to generate **voice** signals for giving route guidance messages or information to a driver of a vehicle. The **voice** tone used for the route guidance message is preferably different from the **voice** tone used to read aloud the outside information message. It is thus possible for the...

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Specification: ...also able to receive e-mail messages sent from other terminals. The device has a **voice synthesizer** to generate **voice signals** from a loudspeaker in accordance with the text data of the received e-mail messages. By generating **voice signals** the user can understand the contents of the e-mail messages without viewing a display device. The device is also outfitted with a **voice navigation device** to generate **voice guidance messages**, for example where the vehicle should turn, to guide the driver along a... ...receives messages from different sources or senders and reads those messages aloud in the same **voice tone**, the user cannot easily recognize whose message is being read reading aloud. Even if... ...the start of the second message because the two messages are read in the same **voice tone**. Therefore, the user may confuse the sender of each message unless the user confirms... ...also be desirable to provide a system that includes a read aloud device and a **voice navigation device**, wherein the system allows the user to easily understand which device is generating... ...A further need exists for a system that includes a read aloud device and a **voice navigation device**, wherein the system prevents the user from simultaneously hearing one message of the... ...the invention, a message processing device includes a receiving device that receives sent messages, a **voice tone memory** which stores a plurality of different **voice tones**, and an allotting device which allots one of the **voice tones** stored in the **voice tone memory** to at least one message received by the receiving device and allots a **different voice tone** stored in the **voice tone memory** to another message received by the receiving device. The system then reads aloud the one message in the one **voice tone** and reads aloud the other message in the **different voice tone**.

Another aspect of the present invention involves a message processing device for a vehicle that... ...a receiving device for receiving outside information sent from outside, a navigation controller for providing **voice guidance information** to guide the driver of the vehicle, and a device for allotting one **voice tone** to the outside information and for allotting a **different voice tone** to the **voice guidance information**.

An additional aspect of the present invention involves a message processing device for a vehicle that includes a receiving device for receiving outside information sent from outside, a **voice tone memory** for storing plural different **voice tones**, and a **voice reader** for reading aloud the outside information by using one **voice tone** stored in the **voice tone memory**. A **voice navigator** providing **voice guidance information** to the driver of the vehicle and an adjusting device adjusts the output timing of when the **voice guidance information** is read aloud and when the electrical information is read aloud to prevent the **voice guidance information** and the electrical information from being read aloud simultaneously.

Another aspect of the... ...pertains to a message processing method that involves receiving messages sent from outside, allotting one **voice tone** to at least one of the messages and allotting a **different voice tone** to a different message, and then reading aloud the one message in the one **voice tone** and reading aloud the different message in the **different voice tone**.

According to another aspect of the invention, a message processing method used in a vehicle involves receiving outside information from an outside source, reading aloud the outside information using a **first voice tone**, and reading aloud **voice guidance information** to a driver of the vehicle to facilitate navigation of the vehicle through use of a **second voice tone** that is different from the **first voice tone**.

Another aspect of the invention involves a message processing method for use in a vehicle... ...outside information sent from an outside source, reading aloud the outside information and reading aloud **voice guidance information** to a driver of the vehicle to provide guidance for driving the vehicle. The timing of when the outside information and the **voice guidance information** are read aloud is adjusted to

prevent the outside information and the **voice** guidance information from being read aloud at the same time.

According to a still further.... message from an outside source, reads aloud the message from the outside source using a **first voice tone**, and reads aloud a message from a second source different from the outside source using a **second voice tone** that is different from the **first voice tone**.

In accordance with another aspect of the invention, a computer readable medium includes a message messages sent from an outside source, reads aloud the outside information messages, and reads aloud **voice** guidance information to a driver of a vehicle to provide guidance information for driving the... for reading aloud the outside information messages and the output timing for reading aloud the **voice** guidance information to prevent the outside information messages and the **voice** guidance information messages from being read aloud at the same time.

This summary of the by like reference numerals and wherein:

Fig. 1 is a block diagram illustrating a mobile **terminal** device related to a first embodiment of the present invention;

Fig. 2 is an example.... in connection with operation of the first embodiment of the present invention for allotting different **voice** tones to messages received from different senders;

Fig. 4 is a system diagram illustrating the.... embodiment of the present invention for controlling the output timing of outside information messages and **voice** navigation messages;

Fig. 7 is a schematic illustration of guidance information provided in accordance with.... 9 is a perspective view of a vehicle illustrating a way in which the mobile **terminal** device according to the present invention can be installed in the vehicle;

Fig. 10 is a perspective view of a communication device that includes a mobile phone **terminal**; and

Fig. 11 is a flow chart illustrating a program process carried out to read outside information messages and **voice** navigation messages in different allotted **voice** tones.

DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 is a block diagram illustrating the configuration of a mobile **terminal** in accordance with a first embodiment of the present invention. The mobile **terminal** is designed to read aloud messages and can be in the form of a Personal Digital Assistant (PDA) which is a type of portable **terminal**, a notebook-type personal computer, an in-vehicle information **terminal**, or other types of devices. In addition, various components of the mobile **terminal**, for example a display monitor, a central processing unit (CPU), a memory, etc, can also.... used in other contexts such as in relation to a vehicle navigation system.

The mobile **terminal** 1 includes a display device 15 for outputting or displaying information in a visual form.... 15 can be in the form of a color LCD (Liquid Crystal Display). The mobile **terminal** 1 also includes a modem 11 that is adapted to be removably connected to a.... Personal Handy-phone System), etc. Such a telephone system can be included in the mobile **terminal** 1 instead of being removably connected.

The modem 11 is designed to communicate with a... ...The mail processing device 13 receives e-mail data sent to it after the mobile **terminal** 1 activates its processing program for receiving e-mail message data.

The mobile **terminal** 1 can be connected with an e-mail server in an on-line information center... ...are displayed on the display device 15.

As further seen in Fig. 1, the mobile **terminal** 1 also includes a read-aloud requesting device 14 which is operated by the user. When the user operates the read-aloud requesting device 14, the **terminal** 1 is placed in its read-aloud mode. For example, a touch-switching system can... ...program is started, the touch switch is displayed on the display device 15 and the **terminal** 1 can be changed if the user touches the displayed touch switch.

When the in-vehicle information **terminal** serves as the mobile **terminal**, it is preferable that the read-aloud mode be started automatically when the vehicle isstarted.

While in the read-aloud mode, the decoded mail data is supplied to a **voice** processor device 17. This **voice** processor device 17 includes a **voice** output controller or **voice** synthesizer 19, a **voice** tone selector 20 that is connected to or interfaces with the **voice** output controller 19, and a **voice** tone data memory 21 that is connected to or interfaces with the **voice** tone selector 20. The sender's address data, the time and date information data, the... ...data and the body data are sent from the mail processing device 13 to the **voice** output controller 19. That data is changed into **voice** signals for being read aloud, and finally the **voice** signals are emitted from the loudspeaker 16 which is connected to the **voice** output controller 19.

The address recognition device 22 detects the sender of each e-mail... ...22 associates distinctive numbers for each sender. The distinctive numbers are also supplied to the **voice** tone selector 20. The **voice** tone selector 20 reads or allots one **voice** tone or **voice** tone data corresponding to the distinctive number from the **voice** tone data memory 21. In this embodiment, there are five audibly different patterns of **voice** tones in the **voice** tone data memory 21, although a different number of **voice** tone patterns can be provided. The distinctive number for distinguishing between each **voice** tone data is allotted to the message from each sender. Then, a specified **voice** tone data is supplied to the **voice** output controller 19. Therefore, each received mail is read aloud in the specified **voice** tone data allotted by the **voice** tone selector 20.

To produce the **voice** tone data that is stored in the **voice** tone memory 21, different individuals can read actual predetermined texts, words or sentences which are then sampled. A different person would preferably be used to produce each of the different **voice** tones. Then, all sampled **voice** tones are encoded by some ordinal method, for example PCM coding. The **voice** tone memory 21 stores such PCM-coded **voice** tone data. Any person's **voice** can be used, for example a high tone male **voice**, a low bass male **voice**, a high tone female **voice**, a low female **voice**, a child's **voice**, etc. In addition to or as an alternative to a person's **voice**, a computer synthesized **voice**, similar to a robot **voice**, can also be used. The **voice** tones are distinguishable from one another as heard by the user.

Fig. 3A and Fighas responded to its request. Following this response-OK signal, in step S3 the mobile **terminal** generates an indicating signal for starting to check sent e-mail messages. After that, the... ...system is in the reading-aloud mode, an indicating signal is generated for making the **voice** output controller 19 read aloud a message such as "there is no e-mail for... ...step S11 that there are five or fewer senders, a distinctive number for a specified **voice** tone data is allotted to each sender in step S12. After that, relation data defining the relationship between the senders and the associated distinctive

number is supplied to the **voice** output controller 19 in step S13.

If the determination at step S11 is No, in... ...sent by the first five senders. In step S15, a distinctive number for the specified **voice** tone data is allotted to each of the first five senders. The distinctive numbers are supplied to the **voice** data selector 20 and the body or content data is supplied to the **voice** output controller 19 in step S16. Therefore, a **different voice tone** data is allotted to each sender and each message sent by a particular sender is supplied to the **voice** output controller 19 in step S16. Consequently, the reading-aloud **voice** tone for each sender's mail is different from one sender to the next when... ...many senders in the received mail list (i.e., more than five senders), the five **voice** tone data stored in the **voice** tone memory are allotted to the first five senders, and for the remaining senders, the same stored **voice** tone data is repeatedly allotted. Thus a reading-aloud unit can be restricted to five senders, and in each unit each sender's mails are read aloud using different **voice** tones.

If it is determined at step S9 that the system is not in the... ...S18.

According to this first embodiment of the present invention, the system can change the **voice** tone for reading aloud e-mail messages when messages from different senders are prepared for... ...whose messages have been already read aloud.

Of course, it is possible to use a **voice** tone to read aloud the received mail list or to use different **voice** tones to read aloud the different received mail items on the received mail list.

In.....This allows the one sender's messages to be read aloud repeatedly in the same **voice** tone. In this case, it is preferable that there be a sufficient number of different kinds of **voice** tone data in the **voice** tone memory 21. It is also possible that the distinctive numbers are registered or assigned for certain predetermined senders by the user beforehand. The user can thus decide which **voice** tone data is assigned to the predetermined senders, thus making it easier for the user to recognize the sender whose messages are being read aloud when the user hears the **voice** tone.

It may occur that the data format of the **voice** tone memory is standardized and also that the relationship between the distinctive number and the **voice** tone is standardized. In such a situation, the sender may be able to send his... ...distinctive number. When such a person's e-mail messages are read aloud at the **terminal** after recognizing the distinctive number attached or chosen by the sender, the **voice** tone can be selected as the sender likes. This thus promotes personalization of the **voice** tone used for reading aloud messages. It is also preferable that the **voice** tone memory be capable of being updated for personalizing the read-aloud **voice** tone. Additional **voice** tone data can be supplied by PCM card medium or CD-ROMs. Also, an on-line network may be useful when an on-line service center which can supply additional **voice** tone data is established. In addition, the e-mail server can be designed to allot or control the **voice** tones.

Although some examples of installing the **voice** tone memory in the mobile **terminal** have been shown, the mobile **terminal** itself need not always comprise such a **voice** tone database. The sender can send each e-mail message with a **voice** tone data and the **terminal** can then read the message aloud by using the **voice** tone data attached to each message. It is also possible for the e-mail server to include a **voice** tone database and be capable of assigning **voice** tone data to messages, with the **terminal** receiving the **voice** tone data for being read aloud when the **terminal** receives e-mail messages.

Of course, the e-mail server may be designed to only assign a distinctive number for **voice** tone data without also including the **voice** tone data itself. In such a situation, the mobile **terminal** will then have to be outfitted to include the **voice** tone database and be able to associate **voice** tones to the assigned

distinctive number.

The mail processing device 13 and the **voice** processing device 17 described above are constituted by a computer system and are controlled by... ...an on-line network or some medium like a CD-ROM, for example. The mobile **terminal** shown in Fig. 1 is one which can be installed on a vehicle, but can... ...one example of an overall e-mail system in which can be incorporated the mobile **terminal** shown in Fig. 1. The mobile **terminal** 1 is connected to the mobile phone 2 which is able to access a mobile... ...3. The mobile-phone center 3 is connected to the public telephone network 8. Each **terminal** 6, 7 is also connectable to the telephone network 8. The terminals 6, 7 can... ...5. The on-line service center 4 includes an e-mail server 4a. The mobile **terminal** 1 is able to receive e-mail messages sent to itself from other terminals after... ...phone center 3 preferably includes many communication cells over a wide area. If the mobile **terminal** 1 moves within the wide area, it can maintain connection to the on-line service center 4 because the mobile **terminal** 1 can change from one cell to another.

Another embodiment of the present invention is... ...in Fig. 5 which sets forth a block diagram showing the configuration of the mobile **terminal** device. The system shown in Fig. 5 is similar to that shown in Fig. 1... ...information, etc. Also, the outside information controller 33 performs processing relating to the display or **voice** output of such information. The outside information controller 33 is similar to the mail processing... ...operating device 36, an outside information memory device 37, a loudspeaker system 38 and a **voice** tone data memory device 39 through the Local Area Network. The display device 35, similar... ...the received e-mail messages, the news information or the guidance messages for navigation. The **voice** tone memory 39 memorizes **voice** tone data of several different kinds and is similar to the **voice** tone memory 21 in Fig. 1.

A map database 40 and a positioning device 41... ...from the map data base 40. The navigation controller 34 then provides data for the **voice** output by making use of the **voice** tone data memorized in the **voice** tone memory 39 and finally outputs the data for the **voice** output from the loudspeaker 38. As a result, the guidance message is output from the loudspeaker 38 based on the **voice** tone which is memorized in the **voice** tone memory 39.

When the outside information controller 33 receives e-mail messages sent from... ...display device 35, and then outputs these from the loudspeaker 38 with the read-aloud **voice**. When the outside information controller 33 outputs **voice** data concerning the e-mail messages, the outside information controller 33 provides data for the **voice** output by making use of the **voice** tone data which is memorized in the **voice** tone memory 39 and finally outputs the data for the **voice** output from the loudspeaker 38. When the outside information controller 33 acquires or receives news... ...the case of e-mail messages.

It is particularly useful in this embodiment that the **voice** tone memory 39 memorizes PCM data based on a male's **voice** and also memorizes PCM data based on a female's **voice**. If the male **voice** PCM data is used for or assigned to the outside information controller 33, the female **voice** PCM data is available for or assigned to the navigation guidance messages. Of course, the opposite association can be employed as well (i.e., the female **voice** PCM data can be used for or assigned to the outside information controller 33 while the male **voice** PCM data is used for or assigned to the navigation guidance messages). In this way, the user can understand by the **voice** tone which is output from the loudspeaker 38 whether outside information is being read aloud... ...the navigation system are being read aloud.

Thus, in accordance with the present invention, the **voice** navigation messages providing **voice** guidance information to the driver of the vehicle are read aloud in a **voice** tone that is allotted to the **voice** navigation messages. Similarly, the outside information messages are read aloud in a **voice** tone that is allotted to the outside information messages. Further, the **voice** tone in which the outside information

messages are read aloud differs from the **voice** tone in which the **voice** navigation messages are read aloud. Fig. 11 generally illustrates a program for reading aloud the different messages in different **voice** tones. In step S40, the program determines whether **voice** navigation messages are to be read aloud and if so, the **voice** navigation messages are read aloud in a **voice** tone allotted to the **voice** navigation messages in step S41. If it is determined in step S40 that **voice** navigation messages are not to be read aloud, it is determined in step S42 whether... ...aloud. If so, in step S43 the outside information messages are read aloud in the **voice** tone that is allotted to the outside information messages, with the **voice** tone allotted to the outside information messages being different from the **voice** tone allotted to the **voice** navigation messages so that the **voice** navigation messages and the outside information messages are read aloud in different **voice** tones.

This embodiment is particularly effective in situations where the vehicle is approaching one guidance intersection or one guidance point while the system is reading aloud outside information. The **voice** output timing is of course important for proper navigation guidance. Even if outside information is being read out, the navigation guidance message is read out in the opposite gender **voice** tone. Therefore, the user is able to discern that a different type of message is... ...the driver is a man, the navigation guidance message may be output in the female **voice** tone. If the driver is a woman, the navigation message can be output in the male **voice** tone. The above-mentioned **voice** tone setting can be performed by the user through hand-operated control. If data concerning the gender of the driver has been registered or preprogrammed, the **voice** tone setting can be accomplished automatically after detecting the registered gender data. It is of course also possible that various **voice** tones (such as a robot **voice** data or a juvenile **voice** data, etc.) can be suitably selected in addition to the gender (i.e., male or female) of the **voice** tone.

To reduce or eliminate the possibility that a navigation guidance message and an outside... ...prevent the navigation guidance messages from being read aloud at the same time as the **voice** output for the outside information and to ensure that the navigation guidance messages are read... ...currently being read aloud so that the decision in step S21 is No, the navigation **voice** guidance message is output from the loudspeaker in step S22. On the other hand, if... ...the reading aloud of the outside information message is temporarily stopped to read aloud the **voice** guidance message, and then the reading aloud of the outside information is restarted in step S25 after the **voice** guidance messages are finished. Preferably, the outside information that is interrupted at step S24 should... ...the reading aloud of the outside information is stopped in step S26 and the navigation **voice** guidance message is output from the loudspeaker 38 in step S27. Then, in step S28, it is determined whether or not all **voice** guidance messages have been read aloud. As an alternative, this step can be substituted for... ...returns to step S28.

If the determination at step S28 is that all of the **voice** guidance messages have been outputted, the outside information may be read aloud again, preferably from... ...being read aloud. Therefore, while the vehicle is moving smoothly before the guidance intersection, the **voice** guidance messages for navigating the vehicle are outputted without the outside information being simultaneously outputted... ...been read out, the outside information can be read aloud in the interval between each **voice** guidance message. Therefore, the user doesn't have to wait excessively long between successive **voice** guidance messages to have the outside information read aloud.

In addition, the **voice** tone for the navigation guidance messages is different from the **voice** tone for reading the outside information and so it is easy for the driver to... ...the screen contents of the display device 35 can be adapted to correspond to the **voice** messages. For example, while the outside information is being read aloud, the outside information can be displayed on the screen. On the other hand, while the **voice** guidance messages for navigating the driver are being outputted, map data about the guidance intersection... ...ROM, for example. In this way, the reading aloud of the different

messages in different **voice** tones can be achieved as can the control of the output timing of the various messages.

Fig. 8 shows a slightly modified version of the mobile **terminal** shown in Fig. 4 in which a passenger seat loudspeaker 38b is connected to the... ...38a is connected to the navigation controller 34. The navigation controller 34 can use female **voice** tone data for outputting its guidance messages while the output information controller 33 uses male **voice** tone data for reading aloud its information, for example, e-mail messages, weather report information, traffic information, news information, business information, etc. The **voice** tone data for navigating the driver may be supplied from the map database 40 instead of the **voice** tone memory 39. In this case, when the **voice** guidance timing is operational, the navigation controller 34 acquires **voice** tone data from the map database 40 and outputs the navigation guidance messages through the loudspeaker 38a installed near the driver's seat. The outside information controller 33 can acquire **voice** tone data from the **voice** tone memory 39, formulate the necessary text (sentences) to be read aloud and then output... ...installed near the passenger's seat. Of course, it is also possible to use male **voice** tone data for the navigation guidance message and female **voice** tone data for reading aloud the outside information.

The outside information controller 33 and the... ...controller 34 can be used to control the output of the above-mentioned navigation guidance **voice** and the communication messages **voice**, with the two controllers 33, 34 forming separate units and separate electrical circuits. It is... ...single unit with one electrical circuitry.

Fig. 9 shows one example for installing the mobile **terminal** on a vehicle. In the case of the positioning device 41 being in the form... ...placed on the surface of the cradle 70, with the cradle device 70 and the **terminal** of the mobile phone 72 being connected through a connector 70a.

It can thus be seen that by virtue of the present invention, different **voice** tones are assigned to different messages, or the senders or sources of different messages, to... ...of messages. The reading aloud of different messages can be made easier by selecting one **voice** tone from a memory to read aloud one kind of message and selecting **another voice tone** to read aloud another kind of message.

The present invention also compares the number of memorized **voice** tones and the number of senders of received messages, and then sequentially reads aloud messages that can be read without repetitively using the same **voice** tone, thus preventing one **voice** tone from being used repeatedly for the messages of different senders during one reading aloud... ...The present invention can also be designed to advantageously memorize an assigned relationship between one **voice** tone and a sender or source who has sent a message or messages after the **voice** tone has been assigned to the sender or source, and then prioritizes the use of that **voice** tone for messages received from such sender or source. Thus, to the extent messages are... ...received from one sender or source, the system can easily and automatically allot the same **voice** tone to messages received from that sender or source.

The present invention also provides a... ...to read aloud both outside information messages as well as navigation guidance information messages, with **different voice tone** data being assigned to the received outside information and the navigation guidance information so that... ...between the two types of information being read aloud. The system memorizes different types of **voice** tone date (e.g., female and male **voice** tone data) and advantageously assigns one **voice** tone data to received message information and a **different voice tone** data to the navigation guidance information so that the two types of information are read aloud using different **voice** tones.

The system according to the present invention is further advantageous in that the output timing of

outside information and the output timing of **voice** navigation guidance information is adjusted for purposes of reducing the possibility of reading aloud the two types of information at the same time, while also ensuring that the **voice** navigation guidance information is provided at the necessary time.

The principles, preferred embodiments and modes...

Specification: ...also able to receive e-mail messages sent from other terminals. The device has a **voice** synthesizer to generate **voice** signals from a loudspeaker in accordance with the text data of the received e-mail messages. By generating **voice** signals the user can understand the contents of the e-mail messages without viewing a display device. The device is also outfitted with a **voice** navigation device to generate **voice** guidance messages, for example where the vehicle should turn, to guide the driver along a... ...receives messages from different sources or senders and reads those messages aloud in the same **voice** tone, the user cannot easily recognize whose message is being read reading aloud. Even if... ...the start of the second message because the two messages are read in the same **voice** tone. Therefore, the user may confuse the sender of each message unless the user confirms... ...also be desirable to provide a system that includes a read aloud device and a **voice** navigation device, wherein the system allows the user to easily understand which device is generating... ...A further need exists for a system that includes a read aloud device and a **voice** navigation device, wherein the system prevents the user from simultaneously hearing one message of the... ...by like reference numerals and wherein: Fig. 1 is a block diagram illustrating a mobile **terminal** device related to a first embodiment of the present invention; Fig. 2 is an example... ...in connection with operation of the first embodiment of the present invention for allotting different **voice** tones to messages received from different senders; Fig. 4 is a system diagram illustrating the... ...embodiment of the present invention for controlling the output timing of outside information messages and **voice** navigation messages; Fig. 7 is a schematic illustration of guidance information provided in accordance with... ...9 is a perspective view of a vehicle illustrating a way in which the mobile **terminal** device according to the present invention can be installed in the vehicle; Fig. 10 is a perspective view of a communication device that includes a mobile phone **terminal**; and Fig. 11 is a flow chart illustrating a program process carried out to read outside information messages and **voice** navigation messages in different allotted **voice** tones. **DETAILED DESCRIPTION OF THE INVENTION**

Fig. 1 is a block diagram illustrating the configuration of a mobile **terminal** in accordance with a first embodiment of the present invention. The mobile **terminal** is designed to read aloud messages and can be in the form of a Personal Digital Assistant (PDA) which is a type of portable **terminal**, a notebook-type personal computer, an in-vehicle information **terminal**, or other types of devices. In addition, various components of the mobile **terminal**, for example a display monitor, a central processing unit (CPU), a memory, etc, can also... ...used in other contexts such as in relation to a vehicle navigation system.

The mobile **terminal** 1 includes a display device 15 for outputting or displaying information in a visual form... ...15 can be in the form of a color LCD (Liquid Crystal Display). The mobile **terminal** 1 also includes a modem 11 that is adapted to be removably connected to a... ...Personal Handy-phone System), etc. Such a telephone system can be included in the mobile **terminal** 1 instead of being removably connected.

The modem 11 is designed to communicate with a... ...The mail processing device 13 receives e-mail data sent to it after the mobile **terminal** 1 activates its processing program for receiving e-mail message data.

The mobile **terminal** 1 can be connected with an e-mail server in an on-line information center... ...are

displayed on the display device 15.

As further seen in Fig. 1, the mobile **terminal** 1 also includes a read-aloud requesting device 14 which is operated by the user. When the user operates the read-aloud requesting device 14, the **terminal** 1 is placed in its read-aloud mode. For example, a touch-switching system can... ...program is started, the touch switch is displayed on the display device 15 and the **terminal** 1 can be changed if the user touches the displayed touch switch.

When the in-vehicle information **terminal** serves as the mobile **terminal**, it is preferable that the read-aloud mode be started automatically when the vehicle isstarted.

While in the read-aloud mode, the decoded mail data is supplied to a **voice** processor device 17. This **voice** processor device 17 includes a **voice** output controller or **voice** synthesizer 19, a **voice** tone selector 20 that is connected to or interfaces with the **voice** output controller 19, and a **voice** tone data memory 21 that is connected to or interfaces with the **voice** tone selector 20. The sender's address data, the time and date information data, the... ...data and the body data are sent from the mail processing device 13 to the **voice** output controller 19. That data is changed into **voice** signals for being read aloud, and finally the **voice** signals are emitted from the loudspeaker 16 which is connected to the **voice** output controller 19.

The address recognition device 22 detects the sender of each e-mail... ...22 associates distinctive numbers for each sender. The distinctive numbers are also supplied to the **voice** tone selector 20. The **voice** tone selector 20 reads or allots one **voice** tone or **voice** tone data corresponding to the distinctive number from the **voice** tone data memory 21. In this embodiment, there are five audibly different patterns of **voice** tones in the **voice** tone data memory 21, although a different number of **voice** tone patterns can be provided. The distinctive number for distinguishing between each **voice** tone data is allotted to the message from each sender. Then, a specified **voice** tone data is supplied to the **voice** output controller 19. Therefore, each received mail is read aloud in the specified **voice** tone data allotted by the **voice** tone selector 20.

To produce the **voice** tone data that is stored in the **voice** tone memory 21, different individuals can read actual predetermined texts, words or sentences which are then sampled. A different person would preferably be used to produce each of the different **voice** tones. Then, all sampled **voice** tones are encoded by some ordinal method, for example PCM coding. The **voice** tone memory 21 stores such PCM-coded **voice** tone data. Any person's **voice** can be used, for example a high tone male **voice**, a low bass male **voice**, a high tone female **voice**, a low female **voice**, a child's **voice**, etc. In addition to or as an alternative to a person's **voice**, a computer synthesized **voice**, similar to a robot **voice**, can also be used. The **voice** tones are distinguishable from one another as heard by the user.

Fig. 3A and Fig. has responded to its request. Following this response-OK signal, in step S3 the mobile **terminal** generates an indicating signal for starting to check sent e-mail messages. After that, the... ...system is in the reading-aloud mode, an indicating signal is generated for making the **voice** output controller 19 read aloud a message such as "there is no e-mail for... ...step S11 that there are five or fewer senders, a distinctive number for a specified **voice** tone data is allotted to each sender in step S12. After that, relation data defining the relationship between the senders and the associated distinctive number is supplied to the **voice** output controller 19 in step S13.

If the determination at step S11 is No, in... ...sent by the first five senders. In step S15, a distinctive number for the specified **voice** tone data is allotted to each of the first five senders. The distinctive numbers are supplied to the **voice** data selector 20 and the body or content data is supplied to the **voice**

output controller 19 in step S16. Therefore, a **different voice tone** data is allotted to each sender and each message sent by a particular sender is supplied to the **voice** output controller 19 in step S16. Consequently, the reading-aloud **voice** tone for each sender's mail is different from one sender to the next when... many senders in the received mail list (i.e., more than five senders), the five **voice** tone data stored in the **voice** tone memory are allotted to the first five senders, and for the remaining senders, the same stored **voice** tone data is repeatedly allotted. Thus a reading-aloud unit can be restricted to five senders, and in each unit each sender's mails are read aloud using different **voice** tones.

If it is determined at step S9 that the system is not in the... S18.

According to this first embodiment of the present invention, the system can change the **voice** tone for reading aloud e-mail messages when messages from different senders are prepared for... whose messages have been already read aloud.

Of course, it is possible to use a **voice** tone to read aloud the received mail list or to use different **voice** tones to read aloud the different received mail items on the received mail list.

In... This allows the one sender's messages to be read aloud repeatedly in the same **voice** tone. In this case, it is preferable that there be a sufficient number of different kinds of **voice** tone data in the **voice** tone memory 21. It is also possible that the distinctive numbers are registered or assigned for certain predetermined senders by the user beforehand. The user can thus decide which **voice** tone data is assigned to the predetermined senders, thus making it easier for the user to recognize the sender whose messages are being read aloud when the user hears the **voice** tone.

It may occur that the data format of the **voice** tone memory is standardized and also that the relationship between the distinctive number and the **voice** tone is standardized. In such a situation, the sender may be able to send his... distinctive number. When such a person's e-mail messages are read aloud at the **terminal** after recognizing the distinctive number attached or chosen by the sender, the **voice** tone can be selected as the sender likes. This thus promotes personalization of the **voice** tone used for reading aloud messages. It is also preferable that the **voice** tone memory be capable of being updated for personalizing the read-aloud **voice** tone. Additional **voice** tone data can be supplied by PCM card medium or CD-ROMs. Also, an on-line network may be useful when an on-line service center which can supply additional **voice** tone data is established. In addition, the e-mail server can be designed to allot or control the **voice** tones.

Although some examples of installing the **voice** tone memory in the mobile **terminal** have been shown, the mobile **terminal** itself need not always comprise such a **voice** tone database. The sender can send each e-mail message with a **voice** tone data and the **terminal** can then read the message aloud by using the **voice** tone data attached to each message. It is also possible for the e-mail server to include a **voice** tone database and be capable of assigning **voice** tone data to messages, with the **terminal** receiving the **voice** tone data for being read aloud when the **terminal** receives e-mail messages.

Of course, the e-mail server may be designed to only assign a distinctive number for **voice** tone data without also including the **voice** tone data itself. In such a situation, the mobile **terminal** will then have to be outfitted to include the **voice** tone database and be able to associate **voice** tones to the assigned distinctive number.

The mail processing device 13 and the **voice** processing device 17 described above are constituted by a computer system and are controlled by... an on-line network or some medium like a CD-ROM, for example. The mobile **terminal** shown in Fig. 1 is one which can be installed on a vehicle, but can...

...one example of an overall e-mail system in which can be incorporated the mobile **terminal** shown in Fig. 1. The mobile **terminal** 1 is connected to the mobile phone 2 which is able to access a mobile... ...3. The mobile-phone center 3 is connected to the public telephone network 8. Each **terminal** 6, 7 is also connectable to the telephone network 8. The terminals 6, 7 can... ...5. The on-line service center 4 includes an e-mail server 4a. The mobile **terminal** 1 is able to receive e-mail messages sent to itself from other terminals after... ...phone center 3 preferably includes many communication cells over a wide area. If the mobile **terminal** 1 moves within the wide area, it can maintain connection to the on-line service center 4 because the mobile **terminal** 1 can change from one cell to another.

Another embodiment of the present invention is.... in Fig. 5 which sets forth a block diagram showing the configuration of the mobile **terminal** device. The system shown in Fig. 5 is similar to that shown in Fig. 1.... information, etc. Also, the outside information controller 33 performs processing relating to the display or **voice** output of such information. The outside information controller 33 is similar to the mail processing.... operating device 36, an outside information memory device 37, a loudspeaker system 38 and a **voice** tone data memory device 39 through the Local Area Network. The display device 35, similar messages, the news information or the guidance messages for navigation. The **voice** tone memory 39 memorizes **voice** tone data of several different kinds and is similar to the **voice** tone memory 21 in Fig. 1.

A map database 40 and a positioning device 41.... from the map data base 40. The navigation controller 34 then provides data for the **voice** output by making use of the **voice** tone data memorized in the **voice** tone memory 39 and finally outputs the data for the **voice** output from the loudspeaker 38. As a result, the guidance message is output from the loudspeaker 38 based on the **voice** tone which is memorized in the **voice** tone memory 39.

When the outside information controller 33 receives e-mail messages sent from.... display device 35, and then outputs these from the loudspeaker 38 with the read-aloud **voice**. When the outside information controller 33 outputs **voice** data concerning the e-mail messages, the outside information controller 33 provides data for the **voice** output by making use of the **voice** tone data which is memorized in the **voice** tone memory 39 and finally outputs the data for the **voice** output from the loudspeaker 38. When the outside information controller 33 acquires or receives news.... the case of e-mail messages.

It is particularly useful in this embodiment that the **voice** tone memory 39 memorizes PCM data based on a male's **voice** and also memorizes PCM data based on a female's **voice**. If the male **voice** PCM data is used for or assigned to the outside information controller 33, the female **voice** PCM data is available for or assigned to the navigation guidance messages. Of course, the opposite association can be employed as well (i.e., the female **voice** PCM data can be used for or assigned to the outside information controller 33 while the male **voice** PCM data is used for or assigned to the navigation guidance messages). In this way, the user can understand by the **voice** tone which is output from the loudspeaker 38 whether outside information is being read aloud.... the navigation system are being read aloud.

Thus, in accordance with the present invention, the **voice** navigation messages providing **voice** guidance information to the driver of the vehicle are read aloud in a **voice** tone that is allotted to the **voice** navigation messages. Similarly, the outside information messages are read aloud in a **voice** tone that is allotted to the outside information messages. Further, the **voice** tone in which the outside information messages are read aloud differs from the **voice** tone in which the **voice** navigation messages are read aloud. Fig. 11 generally illustrates a program for reading aloud the different messages in different **voice** tones. In step S40, the program determines whether **voice** navigation messages are to be read aloud and if so, the **voice** navigation messages are read aloud in a **voice** tone allotted to the **voice** navigation messages in step S41. If it is determined in step S40 that **voice** navigation messages are not to be read

aloud, it is determined in step S42 whether... ...aloud. If so, in step S43 the outside information messages are read aloud in the **voice** tone that is allotted to the outside information messages, with the **voice** tone allotted to the outside information messages being different from the **voice** tone allotted to the **voice** navigation messages so that the **voice** navigation messages and the outside information messages are read aloud in different **voice** tones.

This embodiment is particularly effective in situations where the vehicle is approaching one guidance intersection or one guidance point while the system is reading aloud outside information. The **voice** output timing is of course important for proper navigation guidance. Even if outside information is being read out, the navigation guidance message is read out in the opposite gender **voice** tone. Therefore, the user is able to discern that a different type of message is... ...the driver is a man, the navigation guidance message may be output in the female **voice** tone. If the driver is a woman, the navigation message can be output in the male **voice** tone. The above-mentioned **voice** tone setting can be performed by the user through hand-operated control. If data concerning the gender of the driver has been registered or preprogrammed, the **voice** tone setting can be accomplished automatically after detecting the registered gender data. It is of course also possible that various **voice** tones (such as a robot **voice** data or a juvenile **voice** data, etc.) can be suitably selected in addition to the gender (i.e., male or female) of the **voice** tone.

To reduce or eliminate the possibility that a navigation guidance message and an outside... ...prevent the navigation guidance messages from being read aloud at the same time as the **voice** output for the outside information and to ensure that the navigation guidance messages are read... ...currently being read aloud so that the decision in step S21 is No, the navigation **voice** guidance message is output from the loudspeaker in step S22. On the other hand, if... ...the reading aloud of the outside information message is temporarily stopped to read aloud the **voice** guidance message, and then the reading aloud of the outside information is restarted in step S25 after the **voice** guidance messages are finished. Preferably, the outside information that is interrupted at step S24 should... ...the reading aloud of the outside information is stopped in step S26 and the navigation **voice** guidance message is output from the loudspeaker 38 in step S27. Then, in step S28, it is determined whether or not all **voice** guidance messages have been read aloud. As an alternative, this step can be substituted for... ...returns to step S28.

If the determination at step S28 is that all of the **voice** guidance messages have been outputted, the outside information may be read aloud again, preferably from... ...being read aloud. Therefore, while the vehicle is moving smoothly before the guidance intersection, the **voice** guidance messages for navigating the vehicle are outputted without the outside information being simultaneously outputted... ...been read out, the outside information can be read aloud in the interval between each **voice** guidance message. Therefore, the user doesn't have to wait excessively long between successive **voice** guidance messages to have the outside information read aloud.

In addition, the **voice** tone for the navigation guidance messages is different from the **voice** tone for reading the outside information and so it is easy for the driver to... ...the screen contents of the display device 35 can be adapted to correspond to the **voice** messages. For example, while the outside information is being read aloud, the outside information can be displayed on the screen. On the other hand, while the **voice** guidance messages for navigating the driver are being outputted, map data about the guidance intersection... ...ROM, for example. In this way, the reading aloud of the different messages in different **voice** tones can be achieved as can the control of the output timing of the various messages.

Fig. 8 shows a slightly modified version of the mobile **terminal** shown in Fig. 4 in which a passenger

seat loudspeaker 38b is connected to the... ...38a is connected to the navigation controller 34. The navigation controller 34 can use female **voice** tone data for outputting its guidance messages while the output information controller 33 uses male **voice** tone data for reading aloud its information, for example, e-mail messages, weather report information, traffic information, news information, business information, etc. The **voice** tone data for navigating the driver may be supplied from the map database 40 instead of the **voice** tone memory 39. In this case, when the **voice** guidance timing is operational, the navigation controller 34 acquires **voice** tone data from the map database 40 and outputs the navigation guidance messages through the loudspeaker 38a installed near the driver's seat. The outside information controller 33 can acquire **voice** tone data from the **voice** tone memory 39, formulate the necessary text (sentences) to be read aloud and then output... ...installed near the passenger's seat. Of course, it is also possible to use male **voice** tone data for the navigation guidance message and female **voice** tone data for reading aloud the outside information.

The outside information controller 33 and the... ...controller 34 can be used to control the output of the above-mentioned navigation guidance **voice** and the communication messages **voice**, with the two controllers 33, 34 forming separate units and separate electrical circuits. It is... ...single unit with one electrical circuitry.

Fig. 9 shows one example for installing the mobile **terminal** on a vehicle. In the case of the positioning device 41 being in the form... ...placed on the surface of the cradle 70, with the cradle device 70 and the **terminal** of the mobile phone 72 being connected through a connector 70a.

It can thus be seen that by virtue of the present invention, different **voice** tones are assigned to different messages, or the senders or sources of different messages, to... ...of messages. The reading aloud of different messages can be made easier by selecting one **voice** tone from a memory to read aloud one kind of message and selecting another **voice** tone to read aloud another kind of message.

The present invention also compares the number of memorized **voice** tones and the number of senders of received messages, and then sequentially reads aloud messages that can be read without repetitively using the same **voice** tone, thus preventing one **voice** tone from being used repeatedly for the messages of different senders during one reading aloud... ...The present invention can also be designed to advantageously memorize an assigned relationship between one **voice** tone and a sender or source who has sent a message or messages after the **voice** tone has been assigned to the sender or source, and then prioritizes the use of that **voice** tone for messages received from such sender or source. Thus, to the extent messages are... ...received from one sender or source, the system can easily and automatically allot the same **voice** tone to messages received from that sender or source.

The present invention also provides a... ...to read aloud both outside information messages as well as navigation guidance information messages, with **different voice tone** data being assigned to the received outside information and the navigation guidance information so that... ...between the two types of information being read aloud. The system memorizes different types of **voice** tone date (e.g., female and male **voice** tone data) and advantageously assigns one **voice** tone data to received message information and a **different voice tone** data to the navigation guidance information so that the two types of information are read aloud using different **voice** tones.

The system according to the present invention is further advantageous in that the output timing of outside information and the output timing of **voice** navigation guidance information is adjusted for purposes of reducing the possibility of reading aloud the two types of information at the same time, while also ensuring that the **voice** navigation guidance information is provided at the necessary time.

The principles, preferred embodiments and modes...

Claims:

1. A message processing device comprising:

receiving means (12) for receiving sent messages;

a **voice** tone memory (21) for storing a plurality of different **voice** tones;

allotting means (20) for allotting one of said plurality of different **voice** tones stored in the **voice** tone memory (21) to at least one message received by said receiving means (12) and for allotting a different one of said plurality of different **voice** tones stored in the **voice** tone memory (21) to another message received by said receiving means (12);

voice reading means (19) for reading said at least one message in the one **voice** tone and for reading said another message in the **different voice tone**.

2. A message processing device in accordance with Claim 1, wherein said receiving means (12...

...group containing electronic messages sent by a common sender, said allotting means (20) allotting one **voice** tone to each of the messages in one group and allotting a **different voice tone** to each of the messages in another of the groups.

3. A message processing device... ...processing device in accordance with Claim 1, including means (13) for comparing the number of **voice** tones stored in the **voice** tone memory (21) with the number of different senders associated with the received messages, the **voice**-reading means (19) reading aloud messages sequentially without using the same **voice** tone.

5. A message processing device in accordance with Claim 1, wherein the allotting means (20) allots one **voice** tone to all messages received from the same sender, and including means (13) for memorizing an assigned relation between one **voice** tone and one sender after the allotting means (20) has assigned a **voice** tone to said one sender, means (13) for prioritizing use of a **voice** tone for all subsequent messages received from the one sender after said memorizing means (13) has memorized the assigned relation between the one **voice** tone and the one sender.

6. A message processing device for a vehicle, comprising:

receiving means (32) for receiving outside information sent from outside;

a navigation controller (34) for providing **voice** guidance information to guide a driver of the vehicle; and

means for allotting (33) one **voice** tone for the outside information and for allotting a **different voice tone** for the **voice** guidance information.

7. A message processing device in accordance with Claim 6, including reading aloud means (33,34) for reading aloud the outside information in said one **voice** tone and for reading aloud the guidance information in said **different voice tone**, and means (33,34) for controlling said reading aloud means to interrupt the reading aloud... ...a specified time.

8. A message processing device in accordance with claim 2, wherein said **voice** reading means (19) reads a message sent from outside and a guidance message related to... ...device for a vehicle, comprising:

receiving means (32) for receiving outside information sent from outside;

voice tone memorizing means (39)for storing a plurality of different **voice** tones;

voice reading means (33,34) for reading aloud said outside information by using one **voice** tone stored in said **voice** tone memorizing means (39);

a **voice** navigator (34) for providing **voice** guidance information to a driver; and

adjusting means (33) for adjusting an output timing of when the **voice** guidance information is read aloud and when the electrical information is read aloud to prevent the **voice** guidance information and the electrical information from being read aloud simultaneously.

10. A message processing method, comprising:

receiving messages sent from outside;

allotting one **voice** tone to at least one of said messages and allotting a **different voice tone** to a different message;

reading aloud said at least one message in said one **voice** tone; and

reading aloud said different message in said **different voice tone**.

11. A message processing method in accordance with Claim 10, wherein said step of receiving...
...electronic mail messages sent by a common sender, said step of allotting including allotting one **voice** to at least one of said groups and allotting a **different voice tone** to another group.

12. A message processing method in accordance with Claim 11, wherein said... ...the sender.

13. A message processing method in accordance with Claim 10, wherein said one **voice** tone is allotted from a plurality of **voice** tones stored in a **voice** tone memory and said **different voice tone** is allotted from the plurality of **voice** tones stored in the **voice** tone stored in the **voice** tone memory, and

including comparing the number of **voice** tones stored in the **voice** tone memory with the number of different senders of received messages, and including reading aloud messages sequentially that are able to be read aloud without repeating use of the same **voice** tone.

14. A message processing method in accordance with Claim 10, wherein said step of allotting one **voice** tone to the at least one message includes allotting the one **voice** tone to a sender of the at least one message, and including memorizing an assigned relation between the one **voice** tone and said sender after the one **voice** tone has been allotted to the sender, and prioritizing allotment of said one **voice** tone to messages received from said sender after the assigned relation between the one **voice** tone and said sender has been memorized.

15. A message processing method in accordance with... ...vehicle, comprising:

receiving outside information sent from outside;
reading aloud said outside information;
reading aloud **voice** guidance information to a driver of the vehicle to provide guidance for driving the vehicle;
adjusting a timing of when the outside information and the **voice** guidance information are read aloud to prevent the outside information and the **voice** guidance information from being read aloud at the same time.

17. A computer readable medium.... message from an outside source;
reading aloud the message from the outside source using a **first voice tone**; and
reading aloud a message from a second source different from said outside source using a **second voice tone** that is different from said **first voice tone**.

18. A computer readable medium according to Claim 17, wherein the step of reading aloud.... A computer readable medium according to Claim 17, wherein the message processing program allots the **first voice tone** to said outside message prior to reading aloud said outside message, and allots the **second voice tone** to said second message prior to reading aloud said second message.

21. A computer readable.... receiving outside information messages sent from outside;
reading aloud said outside information messages;
reading aloud **voice** guidance information to a driver of a vehicle to provide guidance information for driving the.... for reading aloud the outside information messages and an output timing for reading aloud the **voice** guidance information to prevent the outside information messages and the **voice** guidance information messages from being read aloud at the same time.

Claims: ...B1

1. A message processing device comprising: receiving means (12) for receiving sent messages; a **voice** tone memory (21) for storing a plurality of different **voice** tones; allotting means (20) for allotting one of said plurality of different **voice** tones stored in the **voice** tone memory (21) to at least one message received by said receiving means (12) and for allotting a different one of said plurality of different **voice** tones stored in the **voice** tone memory (21) to another message received by said receiving means (12); **voice** reading means (19) for reading said at least one message in the one **voice** tone and for reading said another message in the **different** **voice** tone,
characterized in that: said allotting means (20) includes sorting means (13) for sorting all electronic.... data,

said allotting means (20) further comprises means configured to:(i) compare the number of voice tones stored in the voice tone memory (21) with the number of groups of messages waiting to be read aloud.

(ii) if the number of voice tones is not less than said number of groups, allot a respective one of the voice tones to each respective group such that those groups can be read aloud without repeating use of the same voice tone, or

(iii) if the number of **voice** tones is less than the number of groups, (a) select a sub-set of the groups, the sub-set comprising the same number of groups as the number of **voice** tones, (b) allot a respective one of the **voice** tones to each respective group in the sub-set such that those groups can be read aloud without repeating use of the same **voice** tone, and (c) repeat from step (i) after the sub-set of step (iii) has been read aloud; and

said voice reading means is configured to read aloud each of said respective number of groups of messages sequentially using said allotted voice tone that changes from one group to the next.

2. A message processing device in accordance with Claim 1, wherein the allotting means (20) allots one **voice** tone to all messages received from the same sender, and including means (13) for memorizing an assigned relation between one **voice** tone and one sender after the allotting means (20) has assigned a **voice** tone to said one sender, means (13) for prioritizing use of a **voice** tone for all subsequent messages received in future from the one sender after said memorizing means (13) has memorized the assigned relation between the one **voice** tone and the one sender.

4. A message processing device in... ...claim 3, further comprising adjusting means (33) for adjusting an output timing of when the **voice** guidance information is read aloud and when the messages received from outside are read aloud to prevent the **voice** guidance information and said messages from being read aloud simultaneously.

7. A message processing method, comprising receiving messages sent from outside;

allotting one **voice** tone to at least one of said messages and allotting a **different** **voice** **tone** to a different message; and

reading aloud said messages in said allotted voice tones:

characterized in that

said allotting step comprises the sub-steps of:(a) sorting all....the electronic messages based on the sender's address data,

(b) comparing said number of voice tones with the number of groups of messages

waiting to be read aloud,

(c) if the number of voice tones is not less than said numbers of groups, allotting a respective one of the voice tones to each respective group such that those groups can be read aloud without repeating use of the same voice tone, or

(d) if the number of voice tones is less than the number of groups, (i) selecting a sub-set of the groups, the sub-set comprising the same number of groups as the number of voice tones, (ii) allotting a respective one of the voice tones to each respective group in the sub-set such that those groups can be read aloud without repeating use of the same voice tone, and (iii) repeating from step(b) after the sub-set has been read aloudreading aloud each of said respective number of groups of messages sequentially using said allotted voice tone that changes from one group to the next.

8. A message processing method in accordance with Claim 7, wherein said step of allotting one **voice** tone to the at least one message includes allotting the one **voice** tone to a sender of the at least one message, and including memorizing an assigned relation between the one **voice** tone and said sender after the one **voice** tone has been allotted to the sender, and prioritizing allotment of said one **voice** tone to messages received in future from said sender after the assigned relation between the one **voice** tone and said sender has been memorized.

9. A message processing method in accordance withmessage processing method according to any of claims 7 to 9, further comprising: reading aloud **voice** guidance information to a driver of the vehicle to provide guidance for driving the vehicle; and

adjusting a timing of when the outside information and the voice guidance information are read aloud to prevent the outside information and the voice guidance information from being read aloud at the same time.

11. A computer readable medium...

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APPARATUS AND METHOD FOR ARTICULATORY SPEECH RECOGNITION
APPAREIL ET PROCEDE DE RECONNAISSANCE DU LANGAGE ARTICULE

Patent Applicant/Patent Assignee:

- **KELLETT Henry G;**

; ;



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Detailed Description:

...time waveform matching known as autocorrelation, and in time waveform feature extraction such as **voice**-unvoiced, zero-crossing rate, symmetry, envelope and its slope, to name a few. These methods... ...tract carry over and overlap thereby causing spectral differences depending upon the pattern of **voice** source impulses as well as the vocal tract configuration. Different articulatory combinations are not therefore...accurate classification of speech that comparable average intensities be obtained of all frequencies across-the **voice** spectrum.

Automatic gain adjustment is accomplished by level control 28. Automatic level control 28 keeps...of the speech waveform and will therefore have minimum output between source impulses until **voice** articulators move RNA

toward a new phonemic representation. Each cascade is thus designed to correspond...this method, which has been used for speech synthesis, and particularly in devices known as "terminal analog speech synthesizers".

From the above is obtained a set of impulse responses corresponding... bandwidths of the various resonances. The apparatus used for measurement purposes is, in essence, a terminal analog speech synthesizer the design of which is well known in the art.

The parameters...The human can express a wide range of emotional feelings by the tone of his **voice**, and he can adapt his **voice** to a variety of acoustic environments. Some of these expressive types are 1) stressed speech...narrow source impulses, denotes the recognized articulatory category,

D. Matching the Type of Person's **Voice**

The invention can match the type of person's **voice**

by one of three procedures:

1. In some cases, a filter bank for one person will perform adequately on **another voice type**.
2. In some cases, a filter bank for one **voice type** can be modified by the addition, substitution, or parallel application of filters to perform adequately on **another voice type**.
3. In some cases, it may be necessary to design an entirely new filter bank to accommodate a substantially unusual **voice type**.

There are additional methods for accommodating the various types of person's voices.

a... way that
one of the filter banks will provide good performance on
any one known **voice** or **voice type**.

b. Adjustable Filter Bank Recognition, whereby all antiresonances of the filter bank are simultaneously...

? DS

Set	Items	Description
S1	134544	VOICE AND ((SELF ADJ CHECKING) OR (SELF ADJ SERVICE) OR POS OR (POINT NEAR3 SALE) OR TERMINAL)
S2	15	((FIRST OR SECOND OR ANOTHER OR DIFFERENT) (W)VOICE (W) (TY- PE OR PITCH OR TONE))
S3	6	S1 AND S2

? S (respond\$3 or respons\$3) (W) voice (W)(instruction\$1 or command\$1)

0	RESPOND\$3
0	RESPONS\$3
3232661	VOICE
0	INSTRUCTION\$1
0	COMMAND\$1
S4	0 (RESPOND\$3 OR RESPONS\$3) (W) VOICE (W) (INSTRUCTION\$1 OR COMMAND\$1)

? S (respond??? or respons???) (W)voice (W)(instruction? or command?)

Processing
Processing
Processing

```
Processing
Processed 10 of 27 files ...
Completed processing all files
    3235994 RESPOND???
    6092727 RESPONS???
    3232661 VOICE
    1621245 INSTRUCTION?
    2657135 COMMAND?
S5      3 (RESPOND??? OR RESPONS???) (W)VOICE (W)(INSTRUCTION? OR
COMMAND?)
```

? S S5 NOT S4

```
    3 S5
    0 S4
S6      3 S5 NOT S4
```

? T S6/3,K/1-3

>>> User not logged in or session timeout

6/3,K/1 (Item 1 from file: 20)
DIALOG(R)File 20: Dialog Global Reporter
(c) 2007 Dialog. All rights reserved.

01749423 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Shonut Shows Recognition Applications at TECHVentures: Santa Clara Targets Worldwide,
High-volume Markets for Input Devices

PR NEWSWIRE

May 27, 1998 13:17

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(USE FORMAT 7 OR 9 FOR FULLTEXT)

...scanners into a multifunction devicesproviding copy, print, fax and e-mail capabilities. This new version **respondsto voice commands** -- users can simply tell the computer to scan, copy, fax, oremail a document. Other new...

DIALOG(R)File 348: EUROPEAN PATENTS
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6/3K/2
02113504

XML based architecture for controlling user interfaces with contextual voice commands
XML-basierte Architektur zur Steuerung von Benutzerschnittstellen mit kontextabhangigen Sprachbefehlen
Architecture basee sur XML pour le controle d'interfaces utilisateur a l'aide de commandes vocales contextuelles

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Available Text	Language	Update	Word Count
CLAIMS A	(English)	200637	1871
SPEC A	(English)	200637	13475
Total Word Count (Document A) 15346			
Total Word Count (Document B) 0			
Total Word Count (All Documents) 15346			

Specification: ...for the leave request application such that the leave request may be generated (1115). In response, voice commands for signaling for execution of a semantic operation provided by the leave request application and...

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SYSTEM, METHOD AND COMPUTER PROGRAM PRODUCT FOR DEVICE, OPERATING SYSTEM, AND NETWORK TRANSPORT NEUTRAL SECURE INTERACTIVE MULTIMEDIA MESSAGING

SYSTEME, PROCEDE ET PRODUIT PROGRAMME D'ORDINATEUR POUR APPAREIL, SYSTEME D'EXPLOITATION ET MESSAGERIE MULTIMEDIA INTERACTIVE RESEAU, NEUTRE ET SECURISEE

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	Country	Number	Kind	Date
Patent	WO	200210962	A1	20020207
Application	WO	2001US23713		20010727
Priorities	US	2000627357		20000728
	US	2000627358		20000728
	US	2000627645		20000728

US	2000628205	20000728
US	2000706606	20001104
US	2000706609	20001104
US	2000706610	20001104
US	2000706611	20001104
US	2000706612	20001104
US	2000706613	20001104
US	2000706614	20001104
US	2000706615	20001104
US	2000706616	20001104
US	2000706617	20001104
US	2000706621	20001104
US	2000706661	20001104
US	2000706664	20001104
US	2001271455	20010225
US	2001912715	20010725
US	2001912936	20010725
US	2001912905	20010725
US	2001912773	20010725
US	2001912885	20010725
US	2001912860	20010725
US	2001912941	20010725
US	2001912901	20010725
US	2001912772	20010725

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GR; IE; IT; LU; MC; NL; PT; SE; TR;

[OA] BF; BJ; CF; CI; CM; GA; GN; GQ; GW;
ML; MR; NE; SN; TD; TG;

[AP] GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ;
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Language

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Detailed Description:

...and Merchant optionally exchange additional data related to the application that is using this secure response protocol. Advantageously, either the Client or the Merchant can terminate the session by closing the...

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